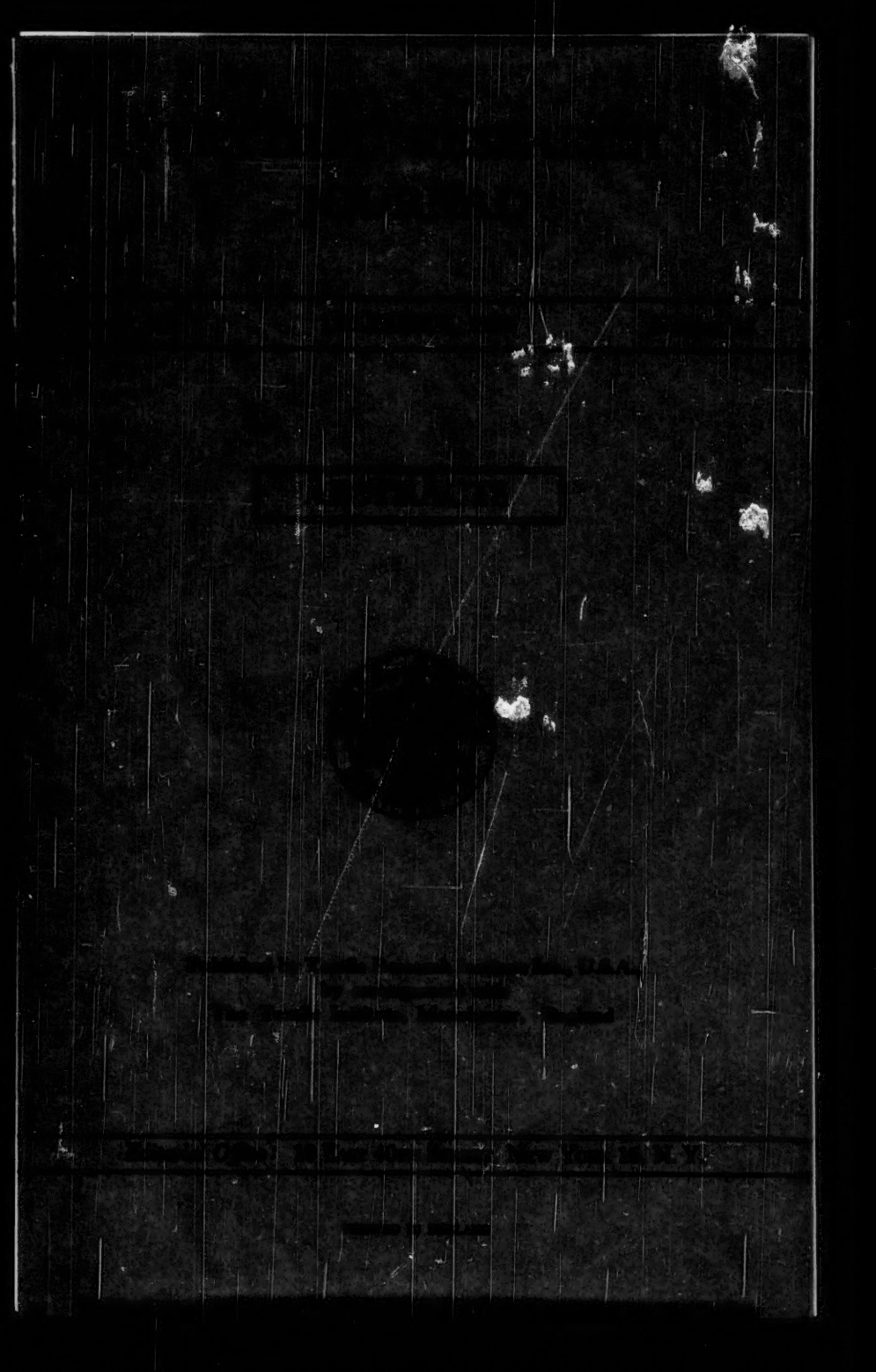

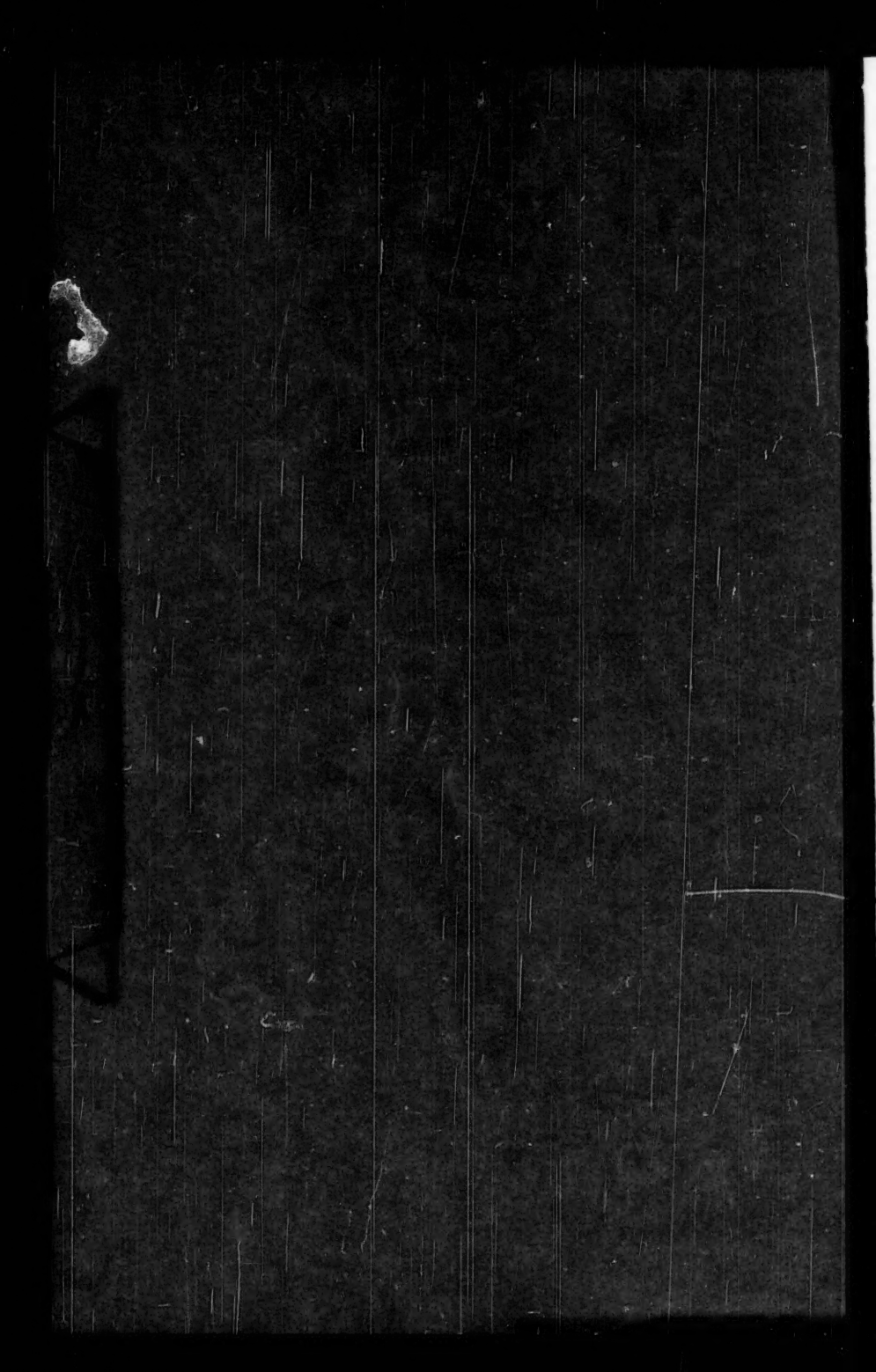

THE JOURNAL OF THE
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ABSTRACTS

(The titles which are set in bold-face are intended as "scanning titles" for ease in classifying and filing. Where these are not substantially the authors' titles the exact titles are set in parentheses.)

1—FIBRES AND THEIR PRODUCTION

(A)—MINERAL

Glass Yarn and Fabric. Anon. *Text. Merc.*, 1950, **123**, 416-418. Some information is presented concerning the glass spinning and weaving industry in Lancashire. This covers producers and users, fibre formation process, and uses (furnishing fabrics, insulating materials, and other commercial uses). C—**1A.**

(B)—ANIMAL

Sheep-killing Bird of New Zealand. E. Bertone. *National Wool Grower*, 1950, **40**, No. 9, 28-29. A description is given of the life-history and habits of the mountain parrot of New Zealand or kea (*Nestor notabilis*). The method of attack on sheep is outlined. W—**1B.**

Otter Sheep. U.S. Garrigus. *National Wool Grower*, 1950, **40**, No. 9, 43. A letter and photograph relating to Ancon or Otter sheep. W—**1B.**

German Merino Mutton Sheep at Elsenburg. P. J. J. van Rensburg. *Fmg. in S. Africa*, 1950, **25**, 217-221, 225. The development of the merino mutton sheep in France and in Germany is briefly described. The first German merino mutton sheep were imported to S. Africa in 1932. Details are given of the present stud sheep, which are hornless, plain-bodied and practically immune to blowflies. The wool, which is free from kemp, is good topmaker's quality; the average wool production per sheep is equivalent to the average for the country. Crossings of early-maturing merinos with merinos have resulted in improvements in fertility, early maturity, rapid growth, favourable live and carcass weights and better conformation. W—**1B.**

Wool and its Classing. C. J. Payne. *Queensland Agric. J.*, 1950, **71**, 98-110. The classing of merino and crossbred clips is illustrated and described. Lines for merino fleeces and skirtings and for crossbred clips are suggested. W—**1B.**

Wool Production, Grading and Marketing. A. M. Hamilton. *Canadian Text. J.*, 1950, **67**, No. 19, 60, 62, 64, 67. A general review which includes descriptions of the breeds of sheep of interest to the wool producer, the types of wool they produce, the shearing operation, the American and English systems of classification and methods of grading. W—**1B.**

Washable Wool Branding Fluids. *Canadian Text. J.*, 1950, **67**, No. 19, 58, 60. Sheep branding fluids which are stated to be completely removed by normal wool scouring methods have been developed in Australia and in the U.S.A. The Australian product is completely miscible with water and, once it becomes dry, the brand is not affected by rain. It contains a fair proportion of stearic acid, which facilitates scouring. Details of the formula are given. The U.S. product remains highly legible after months of exposure and is said to be completely scoured from the wool. This fluid has fewer constituents than the former, being composed of lanolin, carbon tetrachloride and pigment. W—**1B.**

The New Scourable Branding Fluid for Sheep. G. C. Lecompte. *National Wool Grower*, 1950, **40**, No. 9, 26-27, 45. The scourable branding fluid developed by the U.S. Department of Agriculture is described briefly. Photographs of wool previously marked with the fluid in various stages of manufacture are included. W—**1B.**

The Value of Scourable Sheep Branding Fluids in Wool Manufacturing. W. von Bergen. *Text. Industries*, 1950, **114**, No. 9, 157, 161, 163, 165, 176, 171. The difficulties and expense which result from the use of unscourable branding fluids are outlined, and methods used for removing the affected parts in sorting and in the finishing process are described. Removal of paint during combing, while satisfactory to the worsted industry, presents a problem to the industries using noils for both fabrics and felts. It is pointed out that normally scourable products become more difficult to scour after exposure to rain, sunlight, *etc.* The scourable branding fluid described is composed of lanolin, carbon tetrachloride and pigment. After one year's exposure, it was found that the black, red and blue colours (carbon black, ferric oxide red, and ultramarine blue) were most durable. The detergent solution for the subsequent scouring process consisted of a combination of soda ash and soap dissolved in zeolite softened water in a five bowl system. Traces of pigment still remained on some fibres, but cloth manufactured from these was completely free from stain after a normal soap-soda wash in the finishing process. Advantages of this product are (1) it can be removed in a normal scouring process at temperatures not exceeding 135° F., (2) the resulting product is equal to normal paint-free fleece wool in market value, (3) the removal of branding marks during sorting is eliminated, and (4) costly dry-cleaning and repitching operations are not necessary. W—**1B.**

Sheep: Effects of Hypo- and Mild Hyper-thyroidism on Fleece-growth. M. Magsood. *Nature*, 1950, **166**, 647. Three groups of Suffolk male lambs were treated as follows:—(1) daily "Protamone" (thyro-active iodinated casein) was included in the diet, (2) daily doses of a goitrogen (*e.g.* thiouracil) were included in the diet, or the lambs were thyroidectomised, and (3) lambs kept as controls. Samples of wool were taken every month after 5½ months. Mild hyperthyroidism resulted in an increase, while hypothyroidism resulted in a decrease, in fibre length when compared with the control group. In neither case was fibre diameter affected. The fleece in one of the hypothyroid sheep was more easily plucked and the crimps were less distinct than in the control. It is suggested that the thyroid hormone, by increasing the body metabolism with anabolic effects, stimulates wool growth. W—**1B.**

Sheep: The Occurrence and Correction of Cobalt and Copper Deficiency in South Australia. H. J. Lee. *Australian Vet. J.*, 1950, **26**, 152-159. Lecture discussing the symptoms, distribution and incidence of cobalt and copper deficiencies in South Australia. Practical control measures are described. W—**1B.**

Sheep: The Occurrence and Correction of Cobalt and Copper Deficiency in South Australia. W. S. Smith. *Australian Vet. J.*, 1950, **26**, 159-162. Lecture dealing with the problems of the differential diagnosis of cobalt and copper deficiency and with the correction of these deficiencies in the field. W—**1B.**

Sheep: The Effect of Feeding Concentrates to Range Ewes on Lamb and Wool Productivity. J. G. Darroch, A. W. Nordskog, and J. L. van Horn. *J. Animal Sci.*, 1950, **9**, 431-445. The results of supplementing range breeding ewes with beet pulp pellets during pre-breeding, breeding, early pregnancy, and late pregnancy periods are presented. The effect of the supplement on wool growth was negligible, except during early pregnancy, when ewes given the supplement sheared 0·37 lb. heavier fleeces than those not given the supplement. W—**1B.**

Sheep Tick, *Ixodes ricinus* L.: **Ecology: Microhabitat Economy of the Adult Tick.** A. Milne. *Parasitology*, 1950, **40**, 14-34. The general behaviour and survival of the sheep tick in different types of vegetation have been investigated. The major predators of the tick are shrews and, perhaps to a less extent, birds. The behaviour and physiology of the tick suggest that it will be most efficient in a vegetation layer providing ready access to a constant relative humidity of 100 per cent. Other things being equal, the tick is most successful, as judged by density of population, in the deep layer of a rough hill or moorland pasture. W—**1B.**

Sheep Tick, *Ixodes ricinus* L.: **Ecology: Spatial Distribution.** A. Milne. *Parasitology*, 1950, **40**, 35-45. Ground cover and host-potential and their interplay as determining the spatial distribution of the sheep tick, have been investigated. A theory of spatial distribution is presented and the question of "spread" (colonisation) is discussed. W—**1B.**

Parasites in Sheep. ("Experiments with Insecticidal 'Fogs'.") *Wool Record*, 1950, **78**, 1005. The results are briefly described of investigations carried out by the Australian Commonwealth Scientific and Industrial Research Organisation on the use of mechanically applied insecticidal fogs for the control of body lice, keds and other parasites in sheep. The method is of value for shorn sheep, but it has so far failed to give reasonable control in unshorn sheep, and the C.S.I.R.O. is not yet prepared to recommend general use of synthetic fogs to replace dipping or power spraying. W—**1B.**

Sheep: Non-kempy Medullated Fibres in Australian Wool. W. R. Lang. *J. Textile Institute*, 1950, **41**, T309-320. The occurrence of continuously-growing medullation (the fibres being termed "non-kempy" in preference to "hairy") in the wools of merino, Polwarth, Corriedale, British and crossbred breeds in Australia has been investigated. In the merino the quantitative occurrence of medullated fibre is negligible, and in the Polwarth and Corriedale it is not of manufacturing significance. The coarse fibres projecting beyond the staple tip in certain merino wools are usually non-medullated. A comparison of the quantitative occurrence of medullated fibres in crossbred and British breed wools with that of imported Indian carpet wools suggests that there are only small quantities of Australian wool with percentages of medullated fibre similar to those shown by the imported carpet wools. W—**1B.**

Wool Fibre Crimp and Curvature. A. F. Barker. *Text. Mfr.*, 1950, **76**, 389-393. An account of the author's theories on the origin of crimp. W—**1B.**

(C)—Vegetable

Irrigated Cotton: Factors Affecting Spinnability. L. E. Hessler. *Text. Industr.*, 1950, **114**, July, 81-83. A brief indication is given of how the fibre properties of length, strength and fineness that determine spinnability, are themselves governed by cotton variety and growth conditions. The effect of climatic conditions on the spinnability of cotton fibres is also mentioned. Some observations are made on the preparatory processing and spinning of irrigated cotton, and cover gin and insect damage, blending, opening and picking, and spinning tests. C—**1C.**

Flax Straw: Chemical Delignification. E. Besser, R. E. Montonna, and F. Smith. *Nature*, 1950, **166**, 195-196. Seed-flax straw has been completely delignified by treatment for two hours at 155° C. under pressure with an aqueous solution containing sodium hydrosulphite (2 per cent.) and sodium hydroxide (2 per cent.). The residual cellulose fibres can be spun into yarn. Apart from possible industrial applications, the method enables the constituents of cellulosic materials to be separated. Flax straw has afforded cellulose, lignin, hemicellulose, and a pectic acid. C—**1C.**

Jute Fibres: Helical Fibrillar Structure. B. K. Chakrabarti and C. R. Nodder. *Nature*, 1950, **166**, 198. In reply to criticisms by Sen and De[1], the authors defend their conclusions concerning the helical fibrillar arrangements in jute fibres, put forward in an earlier communication.[2] ([1,2]*J. Textile Institute*, 1950, **41**, A131 and 1949, **40**, A159.) C—**1C.**

(D)—Artificial

Artificial Fibres: Search for New Polymers. J. A. Somers. *Brit. Rayon & Silk J.*, 1950, **27**, August, 43-44, 48. Continuing his articles[1] on the structure of new polymers capable of fibre formation, the author discusses polyamides in which the amide and methylene groups are separated by heterocyclic groups. By the heat treatment of mixture of di-hydrazides of dicarboxylic acids in the presence of hydrazine, linear polymers containing 4-amino-1:2:4-triazole groups are obtained. Unlike nylon, these polymers are stable to acid hydrolysis. Mention is also made of polymers prepared by condensing a dicarboxylic acid with a triamine (instead of the usual diamine). These polymers can be prepared with a high degree of basicity which in turn can assist dyeing. Reference is made to relevant patent literature. ([1]*J. Textile Institute*, 1950, **41**, A514.) C—**1D.**

Dynel: Commercial Production. E. Stowell, A. L. Snyder, and R. W. Gaines. *Rayon synth. Text.*, 1950, **31**, July, 35, 36. The commencement of the commercial production of Dynel (a new acrylonitrile-vinyl chloride staple fibre) is announced. Features of the spinning of Dynel yarns and of the knitting, weaving, dyeing, and finishing of Dynel fabrics are outlined. Some uses of these fabrics are mentioned. C—**1D.**

Dynel Staple Fibre: Processing on Cotton System. R. W. Gaines and E. Stowell. *Rayon synth. Text.*, 1950, **31**, June, 61-62. Information obtained on processing Dynel staple on the cotton system is summarised. Opening and picking, carding, drawing, roving, and spinning are briefly considered (see preceding abstract). C—**1D.**

Vicara: Use as Blending Fibre. J. H. Karrh. *Rayon synth. Text.*, 1950, **31**, July, 36, 37. Vicara when blended with many natural or artificial fibres produces yarns and fabrics having improved characteristics. The properties of a few of these blended fibre fabrics and of pure Vicara fabrics are briefly indicated. C—**1D.**

Dynel. *Hosiery Ind. Wkly.*, 1950, **58**, (17), 15-16. Report of lecture to A.A.T.T. reviewing properties of Dynel synthetic staple fibre, its uses in the hosiery industry, and dyeing and finishing techniques. H—**1D.**

Viscose Rayon: Developments. B. Sutcliff. *Hosiery Trade J.*, 1950, **57**, (683), 62. Report of address to the Rossendale Valley Textile Society. Reviews recent developments in viscose rayon manufacture and discusses briefly some of the properties of viscose rayon, Vinyon, acetate rayon and Orlon. H—**1D.**

Synthetic Fibres: Impact on Textile Industry. J. G. Evans. *Hosiery Trade J.*, 1950, **57**, (682), 68. Report of address to S.D.C. Summer School. Discusses the production and price of rayon, nylon and other synthetic fibres, and their impact on the textile industry. H—**1D.**

PATENTS

Electrolytically Polished Stainless Steel Extrusion Jet: Production. British Celanese Ltd. B.P.631,205 of 23/4/1947: 28/10/1949 (Conv. 30/4/1946). A rayon extrusion jet blank formed of 18/8 stainless steel is countersunk on its inner face at the points where the holes are to be drilled. It is then made the anode in an electrolytic bath consisting of equal volumes of glycerin and 85 per cent. phosphoric acid. The cathode is stainless steel of about five times the area of the jet. A 15-volt current of 1·5 amp. per sq. inch of anode is allowed to flow for 20 minutes. The holes are then drilled and the drilled jet is submitted again to the anodic treatment for about 5 minutes. A smooth finish is thereby imparted to the jet, including the orifices. C.

Aromatic Diamine Fibre-forming Interpolyamides: Production. J. G. N. Drewitt and G. F. Harding (British Celanese Ltd.). B.P.632,997 of 16/12/1946: 5/12/1949. A part of the aliphatic diamine used in the production of a fibre-forming polyamide (*e.g.* as hexamethylene diammonium adipate) is replaced by up to 25 molar per cent. of an aromatic diamine the diacetyl derivative of which does not melt below 230° C. (*e.g.* benzidine introduced as benzidine sebacate). The products form filaments with good cold-drawing properties. C.

High-tenacity Cellulose Ester or Ether Threads: Production. Courtaulds Ltd., H. M. Averns, and J. Straw. B.P.633,187 of 12/11/1947: 12/12/1949. A process for the production of high-tenacity threads of thermoplastic cellulose derivatives (especially cellulose acetate) comprises heating threads as normally spun to a temperature at which the material is plastic, stretching the threads at least 50 per cent. (preferably in two stages) and then allowing them to shrink at least 8 per cent. In an example, cellulose acetate thread of dry tenacity 1·15 g. per denier and extensibility 36 per cent. was run through three tubes, 40 inches long, electrically heated to 280° C., and godet wheels of approximate diameters were used to stretch the yarn 75 per cent. in the first stage and 40 per cent. in the second stage, and to effect a shrinkage of 12 per cent. in the third stage. The withdrawal speed was 75 metres per minute. The product had a tenacity of 2·30 g. per denier and an extensibility of 15 per cent. C.

2—CONVERSION OF FIBRES INTO FINISHED YARNS

(A)—PREPARATORY PROCESSES

Cardroom: Management. ("Georgia Mill Carding Practices.") Georgia Textile Operating Executives. *Text. Industr.*, 1950, **114**, May, 127, 129, 133-134; June, 129-136; *Text. World*, 1950, **100**, June, 127, 202, 204, 206, 208. Answers to questions submitted to personnel of Georgia mills on the carding of cotton are summarised. Topics include use of oil on cotton, opening and cleaning equipment, card clothing, sliver cans, anti-friction roller bearings, evenness testers, and slubs in yarns. C—**2A.**

Streamlined Fibre Blending. W. F. Leineweber, jun. *Text. Merc.*, 1950, **123**, 343, 345, 347. An illustrated description of an automatic blending system is given (see *J. Textile Institute*, 1950, **41**, A406). C—**2A.**

Sliver and Ribbon Lap Machines: Rack Raising Motion. Anon. *Platt's Bull.*, 1950, **7**, 27. An attachment, operated by hand-lever, for raising the racks on sliver and ribbon lap machines is described. A considerable saving in the time required to remove a full lap and insert a new bobbin is claimed when this new device is used. C—**2A.**

Artificial Fibres: Perlok System of Tow Stapling. J. L. Lohrke. *Rayon synth. Text.*, 1950, **31**, June, 41. The Perlok System utilises the principle that, if great tensile strength is applied to a band of continuous filament artificial fibres, all filaments do not break at the same place, but rather at random throughout the width of the tow. The tow is thus reduced to a uniform sliver composed of staple fibres with controlled maximum length. A brief description of the system is given with a diagram. C—**2A.**

Single Cylinder Waste Machine. Kirkman & Dixon Machine Shop and Foundry. *Text. Industr.*, 1950, **114**, June, 171. A brief specification is given of the K & D single-cylinder opening and cleaning machine for waste cotton or rayon. C—**2A.**

Textile Mill Practices. Southern Textile Association. *Text. Industr.*, 1950, **114**, June, 123, 125. A brief report is given of a meeting of the Southern Textile Association (U.S.A.) at which textile mill practices were discussed. Topics dealt with include carding, maintenance, warp preparation, weaving, spinning, technical controls, standards, and industrial relations. C—**2A.**

Drawing Frame Measuring Motion. Anon. *Platt's Bull.*, 1950, **7**, 28-29. Brief details are given of a pre-set measuring motion for drawing frames equipped with electrical stop motion. The device can be adjusted to stop the frame when any desired length of sliver has been produced. A signal lamp that lights up when the machine stops is incorporated. C—**2A.**

Drafting Roller Covers: Removal. Anon. *Text. Industr.*, 1950, **114**, July, 159. A simple method of removing old cork or rubber coverings from drafting rollers is described. The cover is pressed off on a roller assembling machine by means of a suitably sized flat washer. C—**2A.**

Condensing on the Woollen Card. A. Bonser. *J. Huddersfield Text. Soc.*, 1949-50, **41**, 12-29. A general review of condensing covering the production of regular slubbing, determination of draft to apply, composition of the card, roller speeds and selection of condensers for different classes of the trade. Descriptions are given of the single ring doffer single stripper condenser, single ring doffer double stripper double rubber condenser, double doffer condenser, series tape condenser, endless tape condenser, figure eight tape condenser, and the Bolette steel tape condenser. The possibility of further improvement in the condenser is indicated. W—**2A.**

Woollen Blending: Past, Present and Future. J. W. Radcliffe. *J. Huddersfield Text. Soc.*, 1949-50, **41**, 66-74. The introduction of continental and semi-continental carding methods has necessitated cleaner and more uniform blends. A description is given of the "Oddie-Radcliffe" system manufactured by Messrs. Spencer, Halstead and Co. Ltd. The "Vortex" system of oiling is also described. Photographs and a diagram are included. W—**2A.**

Carding of Cheviot and Crossbred Skin Wools. *Wool Record*, 1950, **78**, 908, 911. The adjustments and alterations described appertain to the speed of the licker-in, settings of the workers to the swift, setting of the fancies to avoid excessive "fly", the use of "fly" strippers on all the wires in the set, *etc.* Adjustments are necessary whether a ring doffer or tape condenser is employed, as it is advisable to give as little draft as possible to the material in the condensing process. Other subjects discussed include the application of oil, setting of rubbing leathers, speed of the fancy relative to that of the swift, *etc.* W—**2A.**

Drawing. W. Graham. *Text. J. Australia*, 1950, **25**, 598-601. A brief description of the fundamental principles of worsted drawing, and of machinery used for the French and Bradford systems, and for spinning and winding. W—**2A.**

Wool: Report of a Preliminary Study of Electrification Arising in Processing. K. S. Lion. *Bull. Natl. Assoc. Wool Manufacturers*, 1949, **79**, 468-483. Electrostatic phenomena in wool processing are the subject of this preliminary report. Electrification and difficulties arising through it with means used to overcome them, and methods for measurement are discussed. A practical programme for research on methods for overcoming the difficulties is outlined. W—**2A.**

(B)—Spinning and Doubling

Rayon Manufacture: Continuous Spinning and Processing Machine. H. A. Kuljian. *Rayon synth. Text.*, 1950, **31**, June, 39-40. Brief details are given of a new machine for the production of filament rayon which carries out all the operations of spinning, regenerating, desulphurising, bleaching, drying, twisting and packaging in one continuous process. The machine (the "Kuljian" machine) is able to produce yarns of a wide range of characteristics and ranging from 50 to 1,100 in denier. C—**2B.**

Ring and Mule Spinning Plant: Calculation of Efficiency. ("Productivity in Cotton Spinning.") N. H. Pomfret. *Text. Wkly*, 1950, **46**, 176-180. The writer discusses the problem of calculating productivity in cotton spinning having regard to the variety of counts commonly spun and, in mule spinning, the intermittent nature of the process. He argues that the absolute unit of production is the spindle revolution. Calculations based on this would involve enormous numbers but as they would contain certain constants (the hank length, 840 yards × 36 to bring it to inches) a useful production unit could be found in the "million hank turn". This unit is employed in calculations for a 50,000-spindle mill spinning a range of counts from 24s to 40s. It is assumed that 100 per cent. efficiency is achieved when all the spindles run at 9,000 r.p.m. for 100 hours per week. A table shows the relevant data and the calculated "production units". Over-all the output was 72·210 units, against a possible 89·285, giving an efficiency of 80·9 per cent. Some of the spindles had to be run at less than 9,000 r.p.m., however, and the loss of production is ascribed to "efficiency of management"; the calculated production units, allowing for this, are shown as 85·831, giving an "efficiency of management" of $100 \times 85{\cdot}831 / 89{\cdot}285$ or 96·13 per cent. The separate "efficiency of operators" is thus $100 \times 72{\cdot}210 / 85{\cdot}831 = 84{\cdot}13$ per cent. In mule spinning, allowance has to be made for the element of "unproductive time", K (including backing-off, unlocking and winding on). This is a constant for a particular type of mule. It is shown that the efficiency of a mule, E per cent., is connected with the twist wheel figure, TW, in the expression $E = 100\{TW \times C\} \div \{(TW \times C) + K\}$ where C is the increase in the cycle time per tooth of the twist wheel. C—**2B.**

Cotton Spinning Calculation Graphs. ("Spinning Calculations Simplified.") Anon. *Platt's Bull.*, 1950, **7**, 32-37. In Part XIII of this series, graphs and nomograms are given (for ring-spinning frames) for the approximate weight of yarn and the approximate length of yarn contained on bobbins, the approximate length of yarn delivered per hour, and the approximate time to make a set of bobbins. (For Part XII see *J. Textile Institute*, 1950, **41**, A344.) C—**2B.**

Ring-Spinning Frames: Loose Boss Top Rollers; Oiling. ("Increased Production in Spinning Room.") D. V. Sampat. *Indian Text. J.*, 1950, **60**, 640-641. An improved method is described for oiling the loose boss top rollers of a spinning frame. The oiling is done while the frame is in operation. C—**2B.**

Worsted Frame Spinning: Large Packages. *Wool Record*, 1950, **78**, 1331, 1333. Descriptions are given of the Magnum frame, the Parawind, the Velox ring frame, a Continental type ring frame made by McGlynn Hays Industries Inc., and developments in the field of centrifugal spinning. W—**2B.**

Woollen and Worsted Yarn Manufacture. (1—"Plain and Fancy Twisting.") *Wool Record*, 1950, **78**, 1160, 1163. Some typical examples of plain twist yarns for weaving, hosiery and hand-knitting are given. The production of novel effect or compound twist yarns is discussed, and attention is drawn to several points including the necessity for more than one set of rollers (capable of independent and varied surface speeds on the ring twisting machines), an extensive range of qualities, counts and shades, *etc.* The compound twist yarns described include the spiral, gimp, knot and print effect yarns. W—**2B.**

McGlynn Hays Spinning Machine. McGlynn Hays Industries, Inc. *Text. Industries*, 1950, **114**, No. 8, 165. The Universal high speed French type

worsted spinning machine has been improved so that it is now practical to spin worsted yarn at spindle speeds in excess of 10,000 r.p.m. The improvements summarised are (1) six line, high draft, fibre control draft field employing roller drafting only without aprons, (2) pendulum type top pressure roll support, (3) ball bearing pressure rollers, (4) hydraulic front roll pressure, (5) improved ball bearing type spindle, (6) net 8-ounce package using only 2¼-inch ring size, (7) spin regulated drives, (8) pneumafil vacuum system. W—**2B.**

Whitin Woollen Frame: Worn Gears. ("Homemade Spring Clamp Keeps Worn Gears Running.") *Text. World*, 1950, **100**, No. 9, 288, 290. Changing the front roll gear on a Whitin woollen frame requires several hours, and a simple spring clamp is described for keeping the gears running until a convenient opportunity for changing them occurs. W—**2B.**

Carpet Yarn Spinning. *Carpet Rev.*, 1950, **4**, No. 49, 37, 39. The advantages of ring spinning frames for carpet yarn spinning are stated. The data are taken from a survey made by Whitin Machine Works. W—**2B.**

Drawing and Spinning: Roller Pressure. R. S. Audley. *Fibres*, 1950, **11**, 358. Factors affecting roller pressure in producing worsted yarns are discussed, *e.g.*, oiling front rollers in spinning, type of roller covering, count of yarn and quality of material being spun. W—**2B.**

New Woollen Ring Frame. J. J. Rieter & Co. *Fibres*, 1950, **11**, 359-360. The headstock contains all draft gearing, spindle, cylinder and ring rail drives, *etc.*, and sliding panels keep out the dust. Draft and twist change points are provided for both sides of the frame independently. A roller disengaging motion may be incorporated. Movement of the ring rail is confined to the extent of the cop chase and the spindle rail moves down as cop building proceeds. The roller stands are set at an angle of inclination of 70° to improve twist tube drafting. The draft employed is 1·1 to 1·6 according to type of blend and count being spun. Sizes are given for spindle pitch and for rings. The length of lift is up to 10½ in., *i.e.*, a tube length of 11½ in. W—**2B.**

PATENTS

Continuous Filament Yarn Scuffing Apparatus. British Celanese Ltd. B.P. 633,115 of 29/5/1947: 12/12/1949 (Conv. 1/6/1946). The claim is for a process and apparatus for imparting to a continuous filament yarn the characteristics of a spun yarn. The yarn is run against a reciprocating abrasive surface to sever some of the filaments at frequent intervals and scuff up the broken filaments into nubs or curls. C.

Ring Frame Magazine Wrap Mechanism. British Celanese Ltd. B.P.633,454 of 30/9/1947: 19/12/1949 (Conv. 2/10/1946). A twisting and winding machine for the production of yarn packages that taper at both ends and are furnished with magazine wraps ("transfer tails") comprises guide means for leading yarn to the package supports on spindles (*e.g.*, the rings and travellers of a ring spinning frame), means for imparting to the guide means a chaser motion with a traverse stroke of constant length, means for superimposing on the chaser motion a to-and-fro builder motion of lower frequency, and means for momentarily extending the length of the downward stroke of the guide means below the combined traverse of the chaser and builder motions so as to cause the winding of a small amount of yarn on the package support at a distance from the main body of yarn subsequently wound thereon. The chaser motion is produced by a pivoted pair of levers and the builder motion by pneumatic means for moving the levers relatively to one another. A counterweight system is used for raising the yarn guide, the chaser and builder mechanism acting against it to effect the lowering of the guide. C.

Spinning Frame Clearer Roller Stripping Mechanism. Société en nom Collectif des Brevets Florimond Delepierre. B.P.633,556 of 18/10/1946: 19/12/1949 (Conv. 20/11/1945). Mechanism for stripping the top roller clearers of a spinning or like frame comprises a trough-like member that can slide freely lengthwise of the rollers and is traversed by means of a number of cones that rest freely on the rollers with their axes at an angle to the plane containing the axes of the rollers, and a clearing member (*e.g.*, an endless band of card clothing) carried by the trough member and arranged to brush the clearer rollers during its traverse. The cones are journalled in brackets adjustably mounted on the

trough so that they can be adjusted to the required angle with respect to the rollers. C.

Rayon Yarn Twisting Frame Ring and Traveller. Comptoir des Textiles Artificiels. B.P.633,557 of 30/10/1946: 19/12/1949 (Conv. 16/7/1946). A ring and traveller twisting device for rayon yarn combines the horizontal traveller commonly used with cotton ring frames and a vertical adjustable internal sleeve to protect the ring and traveller from the parts that receive lubricant. The upper edge of this sleeve is at a small distance below the plane of the yarn as it passes from the traveller to the bobbin. Two devices are shown for adjusting the vertical relationship between the sleeve and the ring C.

Continuous Ring Spinning. Soc. per Azioni Officine Galileo. B.P.642,246 of 30/8/1950. Improvements are claimed in the ring spinning of woollen yarns to give a range of production similar to that of the self-acting mule. The drawing head has two or more pairs of rollers to draw the roving or slubbing simultaneously with the twisting. The rollers are in the form of solids of revolution with inclined axes. The drawing takes place between the pairs of rollers moving at different speeds, the false twist being imparted at the same time as the draft due to the peculiar shape of the second set of rollers. This shape also tends to keep the slubbing centrally disposed between them. The rollers are preferably made of ceramic material. W.

3—CONVERSION OF YARNS INTO FABRICS

(A)—Preparatory Processes

Warp Beam Handling Trucks. Anon. *Brit. Rayon & Silk J.*, 1950, **27**, August, 60. Two new beam trucks of single design are briefly described (with photographs). The first truck incorporates a hand-operated device enabling one person to remove and transport beams from the beaming machine, etc. The second truck is used to transport drawn or twisted-in warps from the drawing frame to the looms without the necessity of packing up warp and harness. C—**3A.**

Sectional Warping Machine. Crowther Ltd. *Brit. Rayon & Silk J.*, 1950, **27**, July, 69; *Text. Rec.*, 1950, **68**, August, 80. The Crowther high-speed sectional warping machine is designed for the production of sectional warps for knitting and smallwares manufacture. Features of the machine include infinitely variable speed, constant yarn speed, electric controls and pre-setting counters, automatic length and end breakage stop motions, and a yarn inspection table that enables yarn faults to be quickly detected. An illustration of the machine is given. C—**3A.**

Sectional Warping at High Speeds. Anon. *Brit. Rayon & Silk J.*, 1950, **27**, August, 59-60. The Knowles high-speed "Warpmaster", a sectional warping and beaming machine of modern design, is described (see *J. Textile Institute*, 1950, **41**, A515). C—**3A.**

Warp Knotting Machine: Economic Importance in the Wool Industry. ("Betriebswirtschaftliche Bedeutung der Webkettenanknüpfmaschine in der Wollindustrie.") O. Hofmann. *Text.-Praxis*, 1950, **5**, 593. The general conditions under which it is economic to use warp tying-in machines in the wool industry are discussed. A machine tying-in 10,000 ends per hr. will be economic in a plant with at least 80 looms using 3,000-5,000 end warps. W—**3A.**

(B)—Sizing

Warp Yarns: Sizing. Anon. *Text. Wkly*, 1950, **46**, 228-230, 360-364. The writer calls attention to the major changes in sizing practice in recent years, including the decay of "heavy" sizing, the virtual disappearance of the "dressing" process, the invention of machines with automatic controls and more efficient drying, the competition of food industries for sources of starch, and the growing importance of proprietary sizing ingredients based on modified starches and gums. He cites typical complicated recipes of the period about 1910 and refers to information on modern practice in Germany (see B.I.O.S. Over-all Report No. 13) and the United States (see Anglo-American Productivity Team Reports on cotton and rayon weaving). C—**3B.**

U.S. Sizing Practices. Alabama Textile Operating Executives. *Text. Industr.*, 1950, **114**, July, 105-109. A summarised report is given of a discussion on sizing held by the Alabama Textile Operating Executives. Topics dealt with include

the moisture content of warps of high construction, the amount of size on various constructions, wool-nylon blankets for squeeze rollers, homogenised size, use of viscometers, and methods of maintaining straight warps. C—**3B.**

Sizing of Yarns. J. H. Strong. *Text. Merc.*, 1950, **123**, 267-269, 271. Some of the factors that affect the successful sizing of yarns are discussed. These include homogeneity of size, temperature of sow-box, and drying (cylinder and air-drying machines). A few remarks are also made on undersized warps, the care of squeeze rollers, and stretching of the yarn. C—**3B.**

Starch: Modification for Textile Sizing Purposes. J. Lolkema. *Text. Merc.*, 1950, **123**, 262. Ordinary starch products are not suitable for the sizing of yarns, such as viscose rayon, where sizing requirements are high. Again difficulties arise with starch printing pastes and in finishing processes involving starch, owing to crystallisation and retrogradation of the starch. It has been found that many of these difficulties are avoided if etherified or esterified starches are used. Solutions of such modified starches may be repeatedly frozen and thawed out with a complete absence of crystallisation. C—**3B.**

(C)—WEAVING

Jacquard Card Repeater. O. Hughes. *Text. Industr.*, 1950, **114**, June, 116-121. An outline is given of some of the ways in which a card repeater may be used to reduce designing and card-cutting costs in Jacquard mills. C—**3C.**

Negative Dobby Shedding Motions: Pegs, Lags and Card Racks. W. Middlebrook. *Text. Mfr.*, 1950, **76**, 328-329. Types of wooden and metal pegs are briefly described together with their respective merits and methods of insertion and extraction. Information is also presented on the construction of lag chains and on the use of card racks for pattern chains on the single-cylinder dobby. C—**3C.**

Loom Shedding Motions: Developments. Anon. *Text. Whly.*, 1950, **46**, 480, 482, 484. In a brief survey of the development of loom shedding motions, the relative merits of tappet shedding and dobby shedding are discussed. C—**3C.**

Picker Beaters: Calculation of Blows per Inch. Anon. *Text. Industr.*, 1950, **114**, July, 155-157. Two methods of calculating the number of beats or blows delivered by a beater per inch of stock passing through the picker are compared. The methods give widely different results. C—**3C.**

"Stroboloom" Shuttle Flight Stroboscope. Dawe Instruments Ltd. *Text. Merc.*, 1950, **123**, 213. Illustrations are given of a high-intensity stroboscope designed for observing a shuttle in flight. C—**3C.**

Synchronisation Time: Effect on Loom Efficiency. H. P. Stout. *J. Textile Institute*, 1950, **41**, T225-235. An approximate mathematical treatment of synchronisation time, or the time lost while a stationary machine is waiting for attention, is developed. Detailed calculations are not entered into and attention is directed only towards illustrating in a general way the order of time lost through synchronisations, and how this may be expected to vary with the operating conditions. An application of the procedure to jute weaving is discussed and some numerical calculations of synchronisation times are given as examples. C—**3C.**

Weaving Sheds: Organisation; Use of Gantt Charts. J. Laird. *Text. Mfr.*, 1950, **76**, 338-340. Continuing his articles[1] on the use of simple statistical aids in weaving sheds, the author discusses the use of Gantt charts. These charts measure performance against the planned production, and point out divergences from the scheduled programme, together with the reasons. As illustration, examples of the system applied to the weekly production of a pirn-winding machine and to the weekly weft requirements of a weaving shed, are given. ([1] *J. Textile Institute*, 1950, **41**, A495.) C—**3C.**

Weaving Shed Management: Overhead Loom Cleaning. Anon. *Text. Industr.*, 1950, **114**, July, 79-80. A new automatic overhead loom-cleaning unit has been successfully tried out in a South Carolina mill. The unit, which travels on an overhead rail, consists of two high-speed motors driving centrifugal blowers. These blowers direct an air stream downwards on to the looms while a fan clears the ceiling. C—**3C.**

Power Looms: History and Development. I. H. Thomas. *Fibres*, 1950, **11**, 122-128, 154-156, 231-238. The history of the power loom is traced from the

first looms of Cartwright and Miller to the modern fully automatic machine. Attention is given to the development of the primary motions, shedding, picking and beating-up. Illustrations of typical early and modern looms are given. Ancillary mechanisms are also dealt with, including weft forks, warp protection and shuttle protecting devices, let-off motion, take-up motion, and temples. Some modern automatic looms (shuttle- and bobbin-changing) and shuttleless and circular looms are considered, and their characteristic motions are described. **C—3C.**

The Manufacture of Gripper Axminster Carpet. A. Crossland. *Text. Mfr.*, 1950, **76**, 411-415. Gripper Axminister weaving is economical in the use of pile yarn, separate tufts being cut to the required length before insertion. Details are given of the weaves used, and of the functioning of two types of gripper loom. Illustrations are given. **W—3C.**

(D)—KNITTING

Nylon Warp-knitted Fabrics: Production. ("Nylon Warp Knitting Procedures.") E. I. du Pont de Nemours & Co. *Rayon synth. Text.*, 1950, **31**, January, 66-67; February, 67-69; May, 82-94; June, 63-64; July, 65, 67; (to be contd.). Practical hints are given on yarn handling and warping, and on warp knitting machine adjustment. Under warping procedure, the following are dealt with: inspection of parts, alignment of creel, static control, start-up of section spool, uniformity of tension, tensioning devices, warping records and results, and cleaning. Investigations on warp knitting have led to the following concepts of knitting which are briefly discussed: effect of slubs on knitting performance, vertical positioning of guides, lateral positioning of guides, needle depth in sinker throat, needle design, and presser bar setting. Further topics dealt with are sley points, warp tensions, beam ratios, cleaning, and records and performances. A simple optical instrument, the "imagegraph", for the observation of the action of the knitting elements, is briefly described. Other instruments mentioned for setting machines include a lever and springscale assembly for measuring warp spring tensions, a surface gauge, and a dial gauge. **C—3D.**

Warp Knitting: Two-Bar Fabrics. ("Warp Knitting Technology. V."). D. F. Paling. *Brit. Rayon & Silk J.*, 1950, **27**, July, 56, 58, 59. The principles involved in warp knitting when two guide bars are employed are briefly discussed. Instructions and construction diagrams are given for the knitting of some two-bar fabrics. (For Part IV, see *J. Textile Institute*, 1950, **41**, A517.) **C—3D.**

Warp Knitting Technology. VI. D. F. Paling. *Brit. Rayon & Silk J.*, **27**, August, 52-54. Diagrams and instructions are given for the production of two-bar warp-knitted fabrics (in viscose and acetate rayon) of a more advanced design than those previously described.[1] Dimensionally stable fabrics for dress goods and light furnishings are included. [1See preceding abstract.) **C—3D.**

Reciprocating Knitting Machine for Socks. Anon. *Text. Industr.*, 1950, **114**, July, 141, 143. A brief illustrated description is given of the construction of a sock knitting machine that will close the toe and knit the leg and foot in one operation. The machine features two horizontally opposed cylinders which reciprocate throughout the entire knitting operation. **C—3D.**

Elastic Knitting. J. B. Lancashire. *Brit. Rayon & Silk J.*, 1950, **27**, August, 47-48. Instructions and diagrams are given for the construction of five weft-knitted and two warp-knitted structures in elastic yarns. **C—3D.**

Hosiery Mills: Reducing Operating Costs. Anon. *Text. Industr.*, 1950, **114**, July, 135, 137, 139. It is shown how an American hosiery mill has reduced operating costs by providing better inspection facilities, controlling the length of stockings, using a heat-recovery system, and employing an air filtering system to prevent the soiling of goods by atmospheric dirt. **C—3D.**

Knitting: Stitch-shaping. J. B. Lancashire. ("Stitch-shaped knitted garments.") *Hosiery Times*, 1949, **22**, (243), 19-21. (3) The rib eyelet stitch. Describes principles of the rib eyelet stitch, formed by transference of collected sinker loops, and its use in cellular underwear. The Mellor Bromley 3/RLGT/8 and the Stibbe ABTg models are described as examples of typical eyelet machines. *ibid.*, (244), 27-9. (4) The transference of loops. Distinguishes between loop transference between needles of the same set on a Cotton's Patent machine, forming lace stitches, and loop transference between needles of dial and cylinder on

a circular machine, forming transfer stitches, and discusses application of the latter to stitch-shaping, using transfer stitches (*a*) to change from 1/1 to 2/2 rib, and (*b*) as a patterning medium. Machine construction and needle selection are discussed. *ibid.*, (246), 33-7. (3) The Wildt R.T.R. model. Describes the features common to all three types of Wildt R.T.R. machines: timing and control of movements are referred to. *ibid.*, (248), 47-51. (7) The Mellor Bromley 3/RLQTS/1 model. Describes the Mellor Bromley 3/RLQTS/1 model, which is built with needle cylinders 18 and 20 inches in diameter and in various gauges ranging from 5 × 5 to 10 × 10: it is primarily intended for the manufacture of outer garments such as jumpers, pullovers, *etc.* *ibid.*, 1950, **23**, (250), 29-33. (8) Garment making on the Mellor Bromley 3/RLQTS/1 model. *ibid.*, (252), 63-6. (9) The Wildt model Spensa-Purl S.P.C. Describes the Spensa-Purl S.P.C. model built by Messrs. H. Wildt & Co. Ltd. of Leicester. The machine has super-imposed needle cylinders which revolve clockwise and which are set in relation to each other so that the tricks in the upper cylinder are in direct alignment with those in the lower one. The standard product of this model is an outer garment with 2/2 rib border and fancy purl body. Machine design and operation are described. H—**3D.**

Rubber-core Yarns: Employment in Knitwear. *Hosiery Trade J.*, 1950, **57**, (683), 26. Review of applications of rubber-core threads, including swimwear, waist bands of underwear, roll-ons, and tops of ankle, half- and three-quarter hose. H—**3D.**

Fully-fashioned Hose Machine: Design. *Hosiery Trade J.*, 1950, **57**, (682), 56. Describes a new multi-section full-fashioned hose machine manufactured by the Oerlikon Machine Tool Works, Switzerland, and now being marketed in the U.K. Chief features include fully automatic welt turning, and an automatic central jacquard mechanism controlling thirty separate automatic operations. H—**3D.**

Fully-fashioned Knitting Machine: Design. *Hosiery Times*, 1950, **23**, (258), 19-20. Description of the "Samco Rapid" fully-fashioned underwear and outerwear machine built by S. A. Monk (Sutton-in-Ashfield) Ltd. The machine is capable of knitting at 80 courses per minute, thereby increasing production by 33⅓ per cent. Illustrations. H—**3D.**

Knitwear: Design. W. Davis. ("Elements of knitwear design. Ripple and curved effects.") *Hosiery Times*, 1950, **23**, (259), 42, 47-8. Describes the means by which many ripple variations can be obtained in knitted fabrics. Diagrams H—**3D.**

(G)—FABRICS

Warp Tapestry Farbics: Construction. J. Cowburn. *Text. Mfr.*, 1950, **76**, 331-333. The constructions of some "three-warp three-weft" tapestry fabrics are described. This type of structure uses the least quantity of yarn and the three odd picks are easy to run on a pick-at-will loom. Construction diagrams are given. C—**3G.**

Bonded Cotton Fibre Fabrics: Production. ("Cotton in Non-woven Fabrics.") F. A. McCord and R. Steinbach. *Text. Wkly*, 1950, **46**, 374-378, 512-514. Brief particulars are culled from a report of the National Cotton Council of America about the machinery and methods employed in the manufacture of fabrics by bonding webs of carded or "garnetted" cotton fibre. A list of uses for such fabrics is provided, and their special features are discussed. It is reported that a major problem in selling the materials is their resemblance to paper. Customers are said to be hard to convince that they are not paper and expect a correspondingly low cost. C—**3G.**

PATENTS

Automatic Loom Weft Cutting and Pneumatic Removing Mechanism. Crompton and Knowles Loom Works. B.P.632,581 of 30/10/1946: 28/11/1949 (Conv. 4/5/1946). The invention relates to a pneumatic device for removing the scraps of weft severed by the cutting and clamping mechanism at bobbin change on a Crompton and Knowles loom. It is shown in the machine drawings mounted on the sley underneath the shuttle feeler head. In use the upper end of the thread is clamped and the reciprocating pneumatic remover has several picks in which to attract the lower end before the upper end is released. The risk of the loose end falling on the sley and being drawn into the warp shed is thus avoided. C.

Cold-swelling Starch-Formaldehyde Products: Preparation and Application. N.V. W. A. Scholten's Chemische Fabrieken (for J. Lolkema and W. A. van der Meer). (1) B.P.632,785 of 23/4/1946: 5/12/1949 (Conv. 18/6/1945). (2) B.P. 632,786 of 9/5/1946: 5/12/1949 (Conv. 18/8/1944). (3) B.P.632,789 of 12/6/1946: 5/12/1949 (Conv. 22/10/1943). (4) B.P.632,791 of 20/6/1946: 5/12/1949 (Conv. 18/8/1944). (5) B.P.633,342 of 19/7/1946: 12/12/1949 (Conv. 23/11/1944). These inventions are developments of B.P.494,927 which covered a process for making a starch-formaldehyde product that would readily swell in cold water and give a water-resistant layer when dried on a substrate. (1) A mixture of starch, water (two parts) and formaldehyde (more than 10 per cent. on the weight of dry starch) is adjusted to *pH* 5 to 7 and dried in a thin layer on a rotary drum at a temperature below 140° C. (2) A water-insoluble coating is obtained on textile materials (*e.g.*, cotton yarn or bleached cotton fabric) by the application at 40°-50° C. of a solution containing starch, a pre-condensate of an aminotriazine and formaldehyde, and a non-volatile acid (*e.g.*, malonic or phosphoric) and/or a substance that yields acid when heated (*e.g.*, an ammonium salt or Na hexyl sulphate), the *pH* being about 5 to 7, and drying the material on hot drums, whereby the condensation is completed. (3) The cold-swelling product of formaldehyde and starch is obtained by making a mixture of starch and formaldehyde (or paraformaldehyde) neutral or slightly alkaline and drying it in a thin layer on rotary drums (at temperatures below 130° C.) For permanent finishes the product is mixed with an acidic catalyst (*e.g.*, ammonium chloride) and/or a melamine derivative. (4) and (5) Melamine formaldehyde pre-condensates are used. Several examples are given under each patent. (See also B.P.494,927; *J. Textile Institute*, 1939, **30**, A51.) C.

Loom Shuttle Box Extension Device. S. Macro. B.P.632,907 of 20/12/1947: 5/12/1949. A device for increasing the length of a loom shuttle box comprises an aluminium or light alloy extension piece shaped to fit on or over the end of the box back, sley block and bottom plate like the original box end and formed with distance pieces of any required length that fit into cavities in the original box end. Part of the extension piece is shaped for the passage of the picker. C.

"Fiberglas" Cloth Laminates: Production. Pittsburgh Plate Glass Co. B.P. 632,983 of 16/3/1944: 5/12/1949 (Conv. 1/12/1941). The invention relates to the use of esters of the type $C_nH_{2n}(O{\cdot}CO{\cdot}OH)_2$ [*e.g.*, monomeric ethylene glycol-bis(allyl carbonate)] and benzoyl peroxide (as polymerising catalyst) in the production of very tough laminates from "Fiberglas" cloth. C.

Photo-electric Weft Straightening Device. Johnson and Johnson (Gt. Britain) Ltd. B.P.633,104 of 1/4/1947: 12/12/1949 (Conv. 3/4/1946). The invention relates to automatic means, depending on photo-electric impulses, for straightening the weft of a woven fabric, especially light-weight open mesh cotton fabric, but also insect screen cloth woven from plastic filaments or metal. In combines (1) means for conveying the fabric, (2) means for illuminating an area of the fabric of appreciable length in the warp direction by rays of light in planes transverse to the fabric, parallel to the warp and at a low angle of incidence, (3) photo-electric means for measuring the light reflected by the weft in one direction at angles of low reflection, (4) duplicate means for measuring light reflected in the opposite direction, and (5) means (such as a stenter) responsive to any difference being (2) and (4) for correcting the distortion of the weft to which the difference is due. Circuit diagrams are included in the illustrations. C.

Multi-spindle Winding Machine Magazine Wrap Mechanism. British Celanese Ltd. B.P.633,116 of 30/5/1947: 12/12/1949 (Conv. 1/6/1946). In a multi-spindle winding machine having individual yarn guides actuated by a common traverse mechanism, a variable lever link is provided in the connection between the traverse and the guide devices so that the traverse may be extended beyond the normal limits for the purpose of winding a "magazine wrap" ("transfer tail") whereby an uninterrupted flow of yarn may be maintained when the packages are unwound from a creel. The link may be controlled by pneumatic means. C.

Upholstery Webbing. J. R. Bulley. B.P.633,257 of 9/2/1948: 12/12/1949. The claim is for webbing woven with twisted paper warp (*e.g.*, "Somyarn B/12/k" made by Messrs. Somic Ltd., of Preston) and relatively flexible fibre yarn for weft (*e.g.*, 2s cotton) and for selvedge warps (*e.g.*, 9½ s/1). The weave is that usually employed for upholstery webbing. C.

Stop Motion Actuator Unit. L. G. Green and C. F. Keeling. B.P.633,405 of 13/2/1946: 19/12/1949. The invention relates to a stop motion device for knitting and other textile machines, responsive to yarn failure or fault in the knitting mechanism. The unit comprises: (1) power-output member movable under spring load from a loaded to a release position, (2) a pivoted intermediate lever for for holding (1) in its loaded position and capable of releasing it by pivotal movement, (3) a follower movable with (1) and bearing against (2), (4) a pivoted trigger for engaging (2), and (5) electro-magnetic means for releasing (4), all carried by a single mounting and so arranged that the follower (3) engages (2) at a less effective radius than does the trigger (4). The unit may be re-set by restoring the power member (1) to its loaded position. C.

Fully-fashioned Stocking Toe and/or Heel Portions: Knitting on Straight-bar Machines. V. Skole and H. C. Anderson. B.P.633,623 of 7/3/1946: 19/12/1949 (Conv. 19/4/1943). A method of making fully-fashioned stockings on straight-bar knitting machines comprises terminating the toe and/or heel portions with firm selvedges by continued narrowing until only a few wales are left and thereafter continuing knitting to form a "tail" that prevents the transfer of tensile stresses to which the toe or heel may be subjected. The tail is gathered into the seam when the selvedges are gathered together. C.

Short Needle Knitting Machine. J. J. Pares and S. S. Daroca. B.P.633,624 of 10/5/1946: 12/12/1949. The claim is for a knitting machine that employs short needles of greater rigidity and strength than those commonly employed. The machine combines (1) a needle having a tapered and grooved upper part ending in a rigid hook, (2) a knock-over member past which the needle slides during casting-off, and (3) a loop-engaging member provided at one end with a hook that can enter the groove in the needle to retain a loop formed on the needle while the needle hook draws through it a new loop during the movement past the knocking-over member, and releases the old loop for casting-off during movement in the opposite direction. C.

Loom Swell. F. Phillip. B.P.633,633 of 28/12/1946: 19/12/1949. The claim is for a loom swell in which the checking force is provided by helical compression springs fitted along the length of the swell between it and a buttress carried by the back of the shuttle box. C.

Loom Shuttle Guard. H. Richmond. B.P.633,642 of 11/4/1947: 19/12/1949. A shuttle guard that can be moved by hand to an inoperative position when the loom is stopped but automatically returns to its operative position when the loom is started comprises two or more arms that carry suitable guard rails or meshing and are mounted so that they can slide downwards towards one side of the loom. A ball-catch spring is provided to help in drawing the arms down and a yielding catch to hold the arms in the upward position when the sley is stationary. C.

Pile Fabrics: Manufacture. C. F. Taubert. U.S.P.2,495,666 of 24/1/1950. The pile yarn is prepared by compressing it in a tube of braided acetate rayon. Individual ends are then fed into holes in a plate, being allowed to protrude below the lower surface. They are then cut off at the top surface to give the required length of tuft (one tuft in each hole). The lower protruding ends are immersed in rubber latex which is then vulcanised. The acetate rayon covering is dissolved in acetone, leaving free wool tufts. W.

4—CHEMICAL AND FINISHING PROCESSES

(A)—Preparatory Processes

Artificial Fibres: Problems in Finishing. Anon. *Text. Wkly.* 1950, **46**, 502, 504, 574, 576. The introduction of artificial fibres has presented many problems to the finisher, who may have to devise new processes or modify existing ones. Some of the points to be considered include softening temperature, the high stretching given to artificial fibres during manufacture, the effect of softening on the cohesive forces between the molecules of the fibre, the effects of fibre shrinkage, increased resistance of fibres to solvents and dyes, thermoplastic properties, permanence of colour, and fastness to light. C—**4A.**

(B)—Boiling, Scouring, Degumming and Washing

Wool Scouring: Laboratory Aid. E. A. Leonard. *Amer. Wool and Cotton Rep.*, 1950, **64**, No. 34, 23-24, 65. The author advocates the use of laboratory tests in preference to mill trials, and the merits and demerits of each are discussed. The method described can be used for choosing detergents, proper strength of alkali, the best temperatures to be used in scouring, the effects of mechanical factors such as squeeze roll pressure, size of the bowls relative to the amount of wool; immersion time, the number of bowls, *etc.* Some examples illustrating these points are described briefly. Since the skeins in one test may be numerous, a rapid extraction method using carbon tetrachloride and developed by the American Chemical Paint Company, has been adopted. W—**4B.**

Dyeing and Finishing Wool Fabrics: Importance of Scouring. C. S. Whewell. *Text. Manufacturer*, 1950, **76**, 351-352. The importance of correct scouring for woollens and worsteds is stressed, since bad scouring leads to trouble in dyeing and finishing. The oils applied to facilitate yarn manufacture often contain large amounts of mineral oil, and this is difficult to remove from wool. A good solution is to blend suitable reagents with the mineral oil before applying it to the wool. In discussing some defects arising from poor scouring and of importance to the dyer, the lecturer mentioned advantages to be gained from the use of auxiliaries, methods of dealing with faults caused by calcium soaps and colour bleeding resulting from scouring at high temperatures or in the presence of too much alkali. Crabbing, milling and raising are also discussed. W—**4B.**

Scouring Technique. *Wool Rec.*, 1950, **78**, 1072, 1081, 1083. The relative merits of warm or cold scouring and washing-out for wool piece goods are discussed. Particular reference is made to the break-down of the scour during the washing-out process. W—**4B.**

(E)—Drying and Conditioning

Textile Drying Machinery. ("Trends in the Design of Air Drying Plant.") F. H. Slade. *Brit. Silk & Rayon J.*, 1950, **27**, July, 62-65, 72. The principles of drying by means of hot air are briefly indicated and the application of these principles to textile drying is illustrated by a survey of modern textile drying equipment. The equipment dealt with is of the continuous type and includes looped cloth dryers, vertical dryers, stenters, and steam dryers. The chief features of the Mather and Platt dryer, Spooner dryers and the Dalglish double-layer pin stenter are described. Illustrations of typical machines are given. C—**4E.**

"Moistektor" Cloth Moisture Content Control Instrument. Fielden (Electronics) Ltd. *Text. Merc.*, 1950, **123**, 179. An illustration is given of an instrument that can be connected with a drying machine to give an indication of the moisture content of the cloth passing through. It is based on a measurement of the capacitance of an insulated bar or tube over which the cloth runs. When the material is dry there is scarcely any spread of the electric field, but as the moisture content rises the field spreads rapidly and changes the capacitance. C—**4E.**

(I)—Dyeing

Rayon: Dyeing. A. G. Tyler. *Brit. Rayon & Silk J.*, 1950, **26**, February, 53-54; March, 58-59; April, 58-59; May, 58-59; June, 58-59; July, 66-67; August, 49-50; (to be contd.). From the dyer's point of view artificial fibres are classified as (1) Cellulosic rayons: viscose and cuprammonium, (2) Protein and protein-like fibres, and (3) Cellulose acetate and synthetic fibres. Problems encountered in dyeing are discussed. Factors that govern the depth of dyeing of viscose include the actual filament denier of the yarn, the presence or absence of delustring agents, whether the yarn consists of a continuous filament or spun staple fibre, and whether the yarn has been stretch-spun. Three tests for classifying the behaviour of dyes on rayons of varied affinity are discussed, viz., the capillary test, the temperature range test, and the determination of the time of half dyeing. The effects of temperature and electrolytes on "strike" and diffusion are briefly considered. The relative merits of dyeing rayon in hank and cake forms are considered and some aspects of the latter technique are discussed. The following topics are also considered: three methods of vat dyeing (differing in temperature of operation and degree of alkalinity), dyeing viscose rayon in loose stock form with direct, sulphur, vat, and azoic dyes, and dyeing of rayon

in sliver form. Cuprammonium rayon has a very high affinity for dyestuffs and this must be taken into account when selecting suitable dyes. The direct dyes are classified into five groups according to their affinities and the dyeing of cuprammonium rayon is considered with respect to these groups. The use of vat and azoic colours for cuprammonium rayon is also mentioned. Regenerated protein fibres can be dyed with any class of dye used for wool, but the fibres swell much more than wool at low temperatures and they can thus absorb dyestuffs readily from cold dyebaths. Protein fibres are rather sensitive to strong acids and alkalis and so these reagents must be avoided. Mention is made of the dyeing of "Rayolanda", a viscose staple fibre basified with a synthetic resin. C—**41.**

Wool Dyeing: Kinetics (1) Simple Acid Dyes. P. Alexander and R. F. Hudson. *Text. Res. J.*, 1950, **20**, 481-491. It is shown that the rate-controlling mechanism of dyeing wool with the simple acid dye Acid Orange II can be diffusion through an unstirred film of liquid or diffusion through the fibre. At low concentrations of dye, the diffusion of dye through an unstirred film of liquid is the slower of the two processes, whatever the degree of agitation. At higher concentrations of dye, the rate-controlling step changes from diffusion through liquid film to diffusion through solid when the stirring of the solution is increased beyond the point at which the reaction becomes stirring independent and the activation energy, determined from the temperature coefficient, changes from approx. 5 to 13 kg.-cal./mole. At high concentrations of dye the diffusion of dye through the fibre proceeds from a saturated concentration on the fibre surface, which action can be readily treated quantitatively. At low dye concentrations the diffusion through the unstirred liquid film can also be treated by the simple diffusion law. In the intermediate range of dye concentrations, however, the diffusion into the fibre proceeds from a varying concentration on the fibre surface and is treated on the basis of a semi-empirical relationship. From consideration of the diffusion coefficient and the apparent energy of activation it is concluded that dye is not transported through pores, but rather that the swollen fibre behaves like a gel and diffusion occurs by displacement of peptide molecules. W—**41.**

Vat Dyes: Application to Wool and Wool-Rayon Staple Mixtures. R. C. Cheetham. *J. Soc. Dyers and Col.*, 1950, **66**, 478-482. When vat dyes are applied to animal fibres by normal methods alkaline degradation and subsequent loss of tensile strength may be overcome and solid shades on mixtures of wool and cellulosic fibre may be obtained by incorporating sodium metadisilicate in the alkaline reducing liquor and then adding sodium bisulphate to reduce alkalinity and to increase the affinity of the wool for the leuco-compound. The procedure may also be adopted for dyeing wool alone with all classes of vat dyes provided that the leuco-compound is sufficiently soluble. In general, normal fastness standards (to light and washing) on both protein and cellulosic fibres are maintained. The effect of the amount of sodium bisulphate on the relative dyeing affinities of Fibro and wool and on the *pH* of the dyebath in the presence and absence of material are demonstrated. W—**41.**

Wool Dyeing: Improvement of Levelling. A. Carpenter. *Text. Recorder*, 1950, **68**, No. 809, 73-74. Successful results may be obtained from high temperature dyeing provided that attention is given to certain points, *e.g.*, quantities of ammonium sulphate and ammonia, equalisation of residual alkalinity in the goods. A suggested pre-treatment consists in boiling with 3 per cent. monoammonium phosphate and 1 per cent. ammonia. W—**41.**

Knitwear: Dyeing. ("Fibre properties in relation to knitwear dyeing.") *Hosiery Times*, 1949, **22**, (243), 49-53. (8) Vat dyes. Discusses composition and properties of vat dyes of the anthraquinone and indigoid types and outlines dyeing procedure. Difficulties encountered in vat dyeing of knitted fabrics are discussed, and special forms of vat dyes, the sulphuric acid ester salts of the leuco form, which can be applied in the same way as direct cotton or acid wool dyes, are mentioned: these are known under the names Soledon (anthraquinone) and Indigosol (indigo). *ibid.*, (244), 53-7. (9) The application of vat dyes. Discussion of vat dyeing of cotton or rayon knitwear in the winch machine. Compositions of dye liquors and resistance of various dyes to frothing (causing oxidation to the insoluble form) are given, and methods of avoiding aerial oxidation (including use of deep dye becks) are discussed. The control of dye absorption

by controlled addition of stock liquor and salt and by the use of restraining assistants is also discussed, and after-treatments—washing, oxidation, and hot soaping—are outlined. *ibid.*, (245), 43-4. (10) The solubilised vat dyes. Discusses dyeing of cotton knitwear with Indigosol and Soledon dyes. The use of padding methods is referred to, and a method recommended by Wiltshire is described in detail. *ibid.*, (246), 45-6, 51. (11) Vat dyeing by special methods. Describes application of vat dyes to knitted fabrics by pigment dyeing methods and by the vat-acid process, and also describes the use of vat dyes on wool and silk, with reference to indigoid and anthraquinone vat dyes. *ibid.*, (247), 35-6, 56. (12) The dyeing of acetate rayon goods. Describes the development of dyes for acetate rayon—water-insoluble dyes, soluble in cellulose acetate and available in paste or solid form, and water-soluble dyes containing polar groups such as amino, hydroxyl, or carboxyl. The conditions required in practice are discussed. *ibid.*, (248), 53-7. (13) Dyeing of acetate rayon goods. Discusses limitation of depth of shade by limited solubility of dyes, and discusses the practical aspects of dyeing of acetate rayon knitwear. *ibid.*, 1950, **23**, (249), 41-5. (14) Dyeing acetate rayon in fast shades. Describes use of insoluble azoic and certain indigoid vat dyes to obtain blacks fast to light and washing. *ibid.*, (250), 47-51. (15) Fast shades on acetate rayon. Lists groups of dyes available for dyeing acetate rayons and gives details of "concurrent" and "sequential" methods using insoluble azoic dyes which can be formed within the fibre by applying a naphthol and a diazotised base, which will couple to form a coloured pigment. *ibid.*, (251), 36, 41. (16) Wool goods and the acid dyes. Discusses relation of wool fibre structure to dyeing properties. *ibid.*, (253), 41-5. (17) Level dyeing with acid wool dyes. Discusses the main features connected with the absorption of dyes by wool, with particular reference to the influence of *pH* and the importance of even distribution of acid over the wool. Difficulties and faults encountered in practice are discussed. *ibid.*, (254), 41-4. (18) Level dyeing of modified wool. Discusses influence on dye absorption of chemical degradation of wool by alkalis, acids, oxidising or reducing agents, and of degradation due to unequal weathering on the sheep's back. Theories of tippy dyeing are discussed. *ibid.*, (256), 41-5. (19) Some effects of chlorination. Discusses the effect chlorination before or after dyeing has on dyeing of wool goods. Chlorination of wool can affect both the affinity of the wool for dyes and the fastness of the dyeings obtained. *ibid.*, (257), 43-5, 76. (20) Chlorinated wools. Discusses the behaviour of Neolan (metalliferous) dyes on chlorinated wool, with particular reference to the influence of *pH* on dye absorption. The increase in absorption of direct cotton dyes by wool on chlorination is also discussed and the application of this property in dyeing wool mixtures is mentioned. Effect of chlorination on dye fastness is also referred to. H—**41.**

Dyeing: Review. *Hosiery Trade J.*, 1950, **57**, (683), 42-4. Report of S.D.C. Summer School on dyeing, held at Leeds during September. Subjects of lectures included: structure and properties of textile fibres in relation to dyeing (Professor J. B. Speakman); practical application of the results of dyeing research, with particular reference to wool and to nylon (Dr. T. Vickerstaff); continuous processing (Dr. R. G. Fargher); fastness (Mr. C. P. Tattersfield). H—**41.**

Dyeing and Finishing Equipment: Review. E. R. Trotman. *Hosiery Times*, 1950, **23**, (259), 79-80. Report of paper given at symposium held at opening of the Leicester exhibition. Reviews progress in dyeing and finishing equipment since the war. H—**41.**

(J)—Printing

Slub Effect Printing Device. J. R. Stewart. *Text. Industr.*, 1950, **114**, June, 137. A few simple modifications on an intaglio printing machine are described, whereby slub and other novelty effects can be obtained. C—**4J.**

Printed Patterns: Registration. Anon. *Rayon synth. Text.*, 1950, **31**, March, 87-88; April, 82-84; June, 78-79. Problems of the registration or "fitting" of patterns in textile printing are outlined for (i) engraved copper rollers or machine printing, (ii) screen printing, and (iii) hand-block printing. The adjustment of the rollers is discussed with special reference to the "box-wheel" gear arrangement. The influence of roller girth and thickness on registration, and the preliminary setting of the rollers, or pitching, are mentioned. Other factors affecting the registration of the print include the type and characteristics of the cloth, previous mechanical treatment (*e.g.*, stretching), and dampness in selvedges.

Misfitting due to differing tensions of the cloth is noted and finally a few remarks are made on the reduction of registration difficulties by use of two outline rollers. **C—4J.**

Fiberglas Screen Prints. J. H. Thomas. *Rayon synth. Text.*, 1950, **31**, July, 30-31. A method of screen printing Fiberglas fabrics has been developed. The material is first given a high temperature treatment ("Coronizing") to impart wrinkle resistance. The "Hycar-Quilon" method of screen printing which follows is very similar to the conventional method of screen printing, a special resin-pigment printing paste being used. After printing, the fabric is cured at 300° F. for half a minute, then immersed in a Quilon solution, and finally dried. These printed fabrics have a good hand and the colour fastness of vat-dyed cotton. **C—4J.**

(K)—FINISHING

Textile Finishing: Gas-Fired Oven for Heat Treatments. ("Baking of Cloth in Textile Finishing Processes.") Walkden, Makin and Co. *Text. Mfr.*, 1950, **76**, 334. A crease-resisting finish can be applied to textiles by impregnating the fabric with a thermosetting synthetic resin and polymerising the resin by a heat treatment. Details are given of a gas-fired oven that has been designed for this purpose. **C—4K.**

Viscose Rayon Fabrics: Shrinkage Control. J. A. Woodruff. *Bull. A.S.T.M.*, 1950, No. 167, 83-85; *Text. Merc.*, 1950, **123**, 421-422, 424, 427, 433; *Rayon synth. Text.*, 1950, **31**, May, 71-72, June, 51-52. The advantages and disadvantages of the application of shrinkage control to viscose rayon fabrics are discussed with respect to the following considerations: shrinkage control attainable, crease-resistance obtained, cost of treatment, permanence of handle, possible variations of handle, odour, chlorine retention, effect on dye shade or other properties, and fabric weighting. Five classes of treatments for obtaining shrinkage control are outlined, viz. (i) reactant, (ii) bonding, (iii) chemical modifiers, (iv) thermosetting resins, and (v) compressive shrinkage. **C—4K.**

Organdie Finishes. R. G. Manudhane. *Indian Text. J.*, 1950, **60**, 631-635. The processes of mercerising and parchmentising fabrics are discussed. Details are given of methods of sulphuric acid treatment for obtaining organdie effects on lawn, handkerchief cloth, or mulls. The stabilising effect obtained by adding various substances to the sulphuric acid is shown. **C—4K.**

Laminated Fabric-base Plastics: Strength. K. W. Pepper and J. R. Riddell. *J. Soc. chem. Ind.*, 1950, **69**, 195-201. Three methods for determining the interlaminar strength of fabric-base plastics, which have been used with laminates ½ in. thick, are described and compared; with material greater than ¾ in. in thickness, two additional tests may be employed. Certain variables in the preparation of phenolic-bonded laminates are shown not to be critical, but interlaminar strength is sensitive to variations in the moisture content of the impregnated reinforcement at the time of pressing. The interlaminar strength of voidless products made from a phenol-formaldehyde resin in alcoholic solution with absorbent paper or scoured fabrics is substantially constant over the range of resin content likely to be used in practice. With both types of reinforcement, the limiting strength of the resin itself is approached, but not fully attained, at a resin content of 27 per cent. There is no essential difference between the strengths obtained with scoured fabrics or absorbent paper. The beneficial effects of desizing and scouring are conclusively proved. Whilst the scouring process used does not appear to be highly critical, desizing by itself is not an adequate pretreatment. Absence of twist in the threads of a fabric does not contribute to higher interlaminar strength. (See also *J. Textile Institute*, 1946, 37, A459.) **C—4K.**

Wool: Reaction with Organic Chloroamines. (I—"Conditions for Rendering Wool Non-felting.") P. Alexander, D. Carter, and C. Earland. *J. Soc. Dyers and Col.*, 1950, **66**, 538-543. A study of the action of some chloroamines on wool has shown that the wool is rendered unshrinkable only in the presence of high concentrations of hydrogen and chloride ions. Alkylchloroamines produce only limited resistance to washing shrinkage; fabric treated with chloroamides completely resists washing but felts on milling; treatment with chlorosulphonamides produces fabric which resists milling. Wool can be rendered unshrinkable by chloroamines in the absence of high concentrations of hydrogen and chloride

ions only by the use of high concentrations of the reagent and this causes severe degradation. Compared with acid chlorination, the use of the chlorosulphamic acid process described is stated to possess a number of advantages, which are discussed. W—**4K.**

Vertical Singeing Machine. Birch Bros. Inc. *Text. World*, 1950, **100**, No. 9, 144. The machine has either radiant or compression-type burners, and is equipped with adjustable tension, air guiders (optional), and the necessary rolls for guiding the cloth to and from the burners. It has enclosed beaters or brushes for removing ash and pneumatic cloth throw-out bars. W—**4K.**

Raising Gig with Nylon Brushes. ("Nylon Brushes Replace Teasels in Woolen Gigging.") E. H. Helliwell. *Text. World*, 1950, **100**, No. 9, 125, 304, 306. Some advantages resulting from the installation of nylon-bristle teazle brushes include the elimination of gigging streaks giving a more consistent finish, increased production by eliminating time required for teazle inspection, *etc.* The nylon brushes have the necessary stiffness, and the bristles are designed and set so that the action of the teazle is simulated. W—**4K.**

New Chemical Products: Impact on a Traditional Industry. R. W. Moncrieff. *Text. Mfr.* 1950, **76**, 346-350. A general review including the constitution and uses of synthetic detergents, oils, shrinkproofing materials, dyestuffs, mothproofing agents, bleaching agents, textile auxiliaries, *etc.* Other subjects discussed include admixture of synthetic fibres and wool, and uses of new chemicals as plant materials. W—**4K.**

Wool: Changes Produced by Processing. S. Blackburn. *Chem. & Ind.*, 1950, 718-723. Details are given of the composition of wool, and of methods used in its analysis (assessing alterations in the amino acid composition, staining techniques and physico-chemical methods). The application of these methods to the changes observed in wool during scouring, carbonising, bleaching, setting and processes for producing shrink-resistant wool are described. W—**4K.**

Nylon Hosiery: Finishing Equipment. *Hosiery Ind. Wkly.*, 1950, **58**, (13), 1, 12. Describes a new machine for the final finishing of hosiery, developed by Smith, Drum & Co. Production per operator is claimed to be four to five times the usual rates. A dull appearance is imparted to the hosiery. Stockings are not boarded individually, but are laid out full length on the belt of a conveyor dryer. Illustrations. H—**4K.**

(L)—PROOFING

Mothproofing Treatments: Test for Resistance to Washing and Dry-cleaning. ("Prüfung der Beständigkeit einer Mottenschutz-Behandlung gegen Trockenreinigung und Wäsche.") SVMT 25A 3011, *Text-Rundschau*, 1950, **50**, 413. The dry cleaning test is made with trichloroethylene, benzine or perchloroethylene in accordance with SVMT 25-A 2525; the washing test uses a bath of alkali-free soap flakes in accordance with SVMT 25-A 2521. The degree of mothproofing is determined in accordance with SVMT 25-A 3001, the treated material being classified according to its intended uses as: Class I—fastness in its original state: Class II—fastness after 5 dry cleanings: Class III—fastness after two washes, and Class IV—after 5 washes, the material being given only the appropriate test for its function; alternatively, the complete test will indicate the range of application of a mothproofing agent. W—**4L.**

Bacterial Damage in Textiles and its Prevention. ("Bakterielle Schäden an Textilien und ihre Verhütung.") M. Nopitsch. *Melliand Textilber.*, 1950, **31**, 619-627. The question of damage to wool by *Bacillus mesentericus* has been investigated. The damaged wool was stained with Lactophenol Cotton Blue, and successive stages of damage to the inner structure, as revealed by microscopical examination, were classified; photomicrographs show these various stages of damage. Tests were then made on the protection afforded to wool by treatment with chrome, Eulan, acids, bactericidal dyes and antiseptics, the results being compared with wool treated with alkali at *pH* 8·5, when it is most susceptible to bacterial attack. W—**4L.**

Wool: Mildewing. *Wool Sci. Rev.*, 1950, No. 6, 31-42. The production and detection of mildew, its occurrence during wool processing, the testing of mildew-proofing antiseptics, and methods for protecting wool during processing and use, including the rotproofing of papermaker's felts, are described. W—**4L.**

PATENTS

Waterproof Cellulosic Adhesives. Svenska Cellulosa Akt. B.P.632,881 of 9/10/1947: 5/12/1949 (Conv. 26/10/1946). The claim is for waterproof adhesives containing a water-soluble cellulose derivative and a clay that furnishes Ca, Mg and Al ions which render the cellulose derivative insoluble by virtue of base exchange with alkali ions. Suitable cellulose derivatives are the Na salt of carboxymethylcellulose, an alkali salt of a cellulose ether sulphonic acid, and the ammonium salt of cellulose glycollic acid. Suitable clays are bentonite, taylorite and "Wilkinite". C.

Diazotype Prints on Textiles: Production. General Aniline and Film Corporation (assignees of S. C. Slifkin). B.P.632,932 of 30/7/1946: 5/12/1949 (Conv. 18/8/1945). A textile fabric is impregnated with a light-sensitive diazo compound decomposable by light to form a non-coupling compound (*e.g.*, a *p*-alkylaminoaryl diazo compound), a coupling compound that couples in an alkaline medium (*e.g.*, 2:3-dihydroxynaphthalene), and zinc chloride, dried, exposed to light under a photographic negative, and subjected to an alkaline developer (*e.g.*, ammonia). The examples refer to blue, red, sepia, green, grey, orange and yellow photographs on cotton cellulose acetate and polyvinyl fabrics. C.

Cellulose Acetate: Dyeing with Alcoholic Acid Dye Liquors. Textron Incorporated (and L. C. Galatioto). B.P.632,938 of 14/10/1946: 5/12/1949 (Conv. 28/11/1945). A dye-bath for cellulose acetate consists of an alcoholic solution of an acid dye, containing less than 50 per cent. of alcohol, and an inorganic and/or organic acid, the concentration of alcohol and acid being "between its threshold value and its critical point with reference to the absorption characteristics developed thereby in the cellulose acetate." The "threshold value" is the concentration at which the mixtures of aqueous alcohol plus acid exhibits a markedly greater wetting and penetrating power than the corresponding aqueous alcohol alone. The "critical point" is of two types, one being the concentration at which delustring of the cellulose acetate ensues and the other marking the inception of extensive swelling and ultimate disintegration. These relationships are shown in two tables for solutions of Wool Fast Blue G.L. (Colour Index No. 833) in 20 per cent. and 40 per cent. ethyl alcohol. Each table indicates the effect on cellulose acetate for 37 mixtures containing as other components one or more of the following: Cellosolve, carbitol acetate, ethyl acetate and sulphuric, formic and acetic acids. C.

Metallisable Dipyrazolone Disazo Dyes. J. R. Geigy A.G. B.P.632,944 of 10/1/1947: 5/12/1949 (Conv. 27/12/1945). The claim is for disazo dyes that employ as starting materials (A) 1-amino-6-nitro-2-hydroxynaphthalene-4-sulphonic acid, (B) a urea or thiourea obtained by condensation of an aminoarylpyrazolone with phosgene or thiophosgene, and (C) a suitable diazotisable aromatic amine. In one process of manufacture (A) and (C) are diazotised and coupled in any desired order with (B). Examples refer to red dyeings (after coppering) on cellulose. C.

Open-width Cloth Dyeing Machine. J. Dungler. B.P.632,975 of 1/7/1947: 5/12/1949 (Conv. 23 and 25/7/1946). A machine for dyeing cloth at full width without tension comprises a foraminous roller fed with the dye liquor, a travelling band of stainless metal textile or plastic netting that carries the fabric around the greater part of the dye roller and adjustable-speed means for feeding the cloth. The machine may also include a second, similar liquor. The liquors that penetrate the cloth are collected and returned to the storage tanks. C.

Roller Nip Trough Dyeing Apparatus. J. Dungler. B.P.633,006 of 21/4/1947: 5/12/1949 (Conv. 30/4/1946). Dyeing apparatus is claimed in which the nip between horizontal rollers which are pressed together constitutes the reservoir for the dye liquor or paste. The end plates to the trough are formed by liquid-tight flanges mounted one on each roller and pressed against the ends. Alternatively, two rollers may be mounted parallel above or alongside a middle roller which carries the two end plates. C.

Carpet Dyeing Machine. K. Dutton, J. E. Holt, R. H. Sennett, and Imperial Chemical Industries Ltd. B.P.633,046 of 3/1/1948: 5/12/1949 [Addition to B.P.609,411]. An appliance for dyeing pile fabrics (especially carpets) comprises a vessel for the dye liquor and a device forming a slot for the continuous squeezing of the impregnated fabric. For example, the "slot" may be formed

by effecting reaction between copper tri-(chloromethyl)phthalocyanine and and as broad as the thickness of the carpet, including the upstanding pile. (See B.P.609,411; *J. Textile Institute*, 1949, **40**, A195.) C.

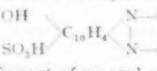
Anthraquinone-Acridone Vat Dyes. General Aniline and Film Corporation (assignees of L. D. Barrick and P. Nawiasky). B.P.633,132 of 11/10/1946: 12/12/1949 (Conv. 20/9/1945). The given example relates to a pure blue vat dye obtained by heating together equimolecular proportions of bz-4′-chloro-4-amino-anthraquinone-2:1-benzacridone and *p*-chlorobenzyl chloride at 110-130° C. in chlorobenzene. C.

Cloth Steaming Vessel. C. R. Holroyd. B.P.633,135 of 27/1/1947 and 27/2/1948: 12/12/1949. A process for impregnating textile materials with steam without risk of condensation employs a treatment chamber fitted not only with the usual air vacuum pump but also with a thermostatically controlled steam coil for securing a controlled degree of pre-heating of the material and the internal fittings. C.

"Onium" Dyes: Application in Printing. T. Chadderton, R. Thornton, and Imperial Chemical Industries Ltd. B.P.633,160 of 10/7/1947: 12/12/1949. The claims relate to the use in textile or paper printing of "onium" dyes, that is, dyes containing one or more quaternary ammonium, ternary sulphonium or isothiouronium salt groups linked by a methylene group to an aromatic nucleus, this nucleus remaining as part of the dye molecule on fixation. The dyes may be used alongside other types. Seven examples are given in detail. In the last, three printing pastes are applied in succession, one containing the dye obtained by effecting reaction between copper tri-(chloromethyl)phthalocyanine and tetramethylthiourea, the second Caledon Printing Blue RNS, and the third Brentogen Scarlet RS. The result is a fast print in scarlet, royal blue and bright turquoise blue shades. C.

Copperable Polyazo Dyes. J. R. Geigy A.G. B.P.633,166 of 1/8/1947: 12/12/1949 (Conv. 2/8/1946). [Addition to B.P.579,063.] Copperable polyazo dyes that give blue, grey and black dyeings on cellulose are obtained by coupling one mol. of a tetrazotised 4:4′-diamino-3:3′-dialkyloxydiphenyl derivative in any desired order, with (A) one mol. of a mono-azo dye obtained by acid coupling of an *o*-carboxydiazonium compound of the benzene series with 2-amino-5-hydroxynaphthalene-7-sulphonic acid and (B) one mol. of a 1-benzeneazo-2-amino-5-hydroxynaphthalene-7-sulphonic acid. The examples refer to navy blue dyeings. (See B.P.579,063; *J. Textile Institute*, 1946, **37**, A523.) C.

Coppered Azo-Azine Dyes. Sandoz Ltd. B.P.633,206 of 20/11/1947: 12/12/1949 (Conv. 13/12/1946). The invention relates to bluish-grey fast dyes for cellulose, prepared by coupling one mol. of a tetrazotised 3:3′-dialkoxy-4:4′-diaminodiphenyl (*e.g.*, dianisidine) with one mol. of a hydroxynaphthalene-sulphonic acid and one mol. of an *α*:*β*-naphthophenazine of the formula



where the system >C=C< is part of an aryl residue, and treating the dyes thus obtained with copper-yielding solutions (*e.g.*, ammoniacal copper oxide) in bulk or on the fibre. Five examples are a given in detail. C.

Yarn Package Packing Case Handling Mechanism. Knowles Ltd. and M. Goddard. B.P.633,282 of 14/2/1948: 12/12/1949. The invention relates to mechanism by means of which a packing case for yarn packages is held in a tilted position from which it gradually returns to the vertical as it is filled. It is claimed that the packer can do his work without stooping over the case. C.

Cloth Open-width Drying Machine. Hunt and Moscrop Ltd. and J. Sharpe. B.P.633,292 of 18/2/1948: 12/12/1949. The claim is for a drying machine in which the cloth travels in open width through an upper compartment and back through a lower compartment. Two fans are used to supply drying air to the cloth and they are fitted into a common fan scroll so that one fan directs air to the upper surface of the cloth in the upper compartment and the other fan serves the lower surface in the lower compartment. The scroll keeps the two air streams separate. C.

Photo-sensitive Textile Printing Screens. A. C. Birtwistle, A. Chadderton, R. Thornton, and Imperial Chemical Industries Ltd. B.P.633,293 of 18/2/1948: 12/12/1949. The claim is for the use of polythene in the photo-sensitive chrome medium which is applied in the dark to a silk screen for textile printing by the photo-sensitive film technique. C.

Organic Phosphate Flame-proofing Composition. A. McLean, S. F. Marrian, and Imperial Chemical Industries Ltd. B.P.633,441 of 11/6/1947: 19/12/1949. Cellulosic materials are flame-proofed without becoming stiff by impregnation with a polyethylene-imine, baking, and then impregnating with a solution containing an orthophosphoric ester of inositol, penta-erythritol or a polypenta-erythritol and a quaternary ammonium base in which at least one radical has a long chain (*e.g.* cetyltrimethylammonium hydroxide). C.

Coppered and Fixed Dyeings: Discharging. J. R. Geigy A.G. B.P.633,445 of 24/7/1947: 19/12/1949 (Conv. 25/7/1946). [Addition to B.P.616,950.] Dyeings that have been treated with fixing agents of the type of "Fibrofix", "Cuprofix" and "Tinofix" and thus contain copper (either ionisable or bound in a complex) and a resin that improves the fastness to water, can be discharged to clear whites if an agent that yields cyan ions (*e.g.*, zinc cyanide) is added to the hydrosulphite paste. (See B.P.616,950; *J. Textile Institute*, 1949, **40**, A516.) C.

Phthalocyanine Vat Dye Leuco Sulphuric Esters. N. H. Haddock, W. O. Jones, J. K. Page, D. G. Wilkinson, and Imperial Chemical Industries Ltd. B.P.633,478 of 31/7/1946: 19/12/1949. Water-soluble derivatives of vat dyes of the formula $P(AV)_x$, where P is the residue of a phthalocyanine, A is a linking group, V is the residue of a vattable compound and x is 1, 2, 3 or 4, are obtained by treating either the vat dyes in the presence of a metal and an organic base, or the leuco derivatives of the vat dyes in the presence of an organic base, with sulphur trioxide or the addition compound of sulphur trioxide and an organic amide or tertiary base. The linking group A may be $-CH_2{\cdot}S-$, $-NH{\cdot}CO-$, $-CO-$, $-S-$, or the oxazole ring. Unlike the leuco compounds of the phthalocyanine vat dyes themselves, these leuco sulphuric esters are stable in alkaline hydrosulphite solutions. C.

Anthraquinone Vat Dye Leuco Sulphuric Esters. Imperial Chemical Industries Ltd. and others, as follows:—(1) S. Coffey and D. A. W. Fairweather. B.P.633,480 of 23/8/1946: 19/12/1949. (2) S. Coffey, D. A. W. Fairweather and D. E. Hathway. B.P.633,481 of 23/12/1946, 22/11/1946 and 26/2/1947: 19/12/1949. (3) S. Coffey, D. A. W. Fairweather, D. E. Hathway and F. H. Slinger. B.P.633,483 of 22/11/1946: 19/12/1949. (4) S. Coffey, D. A. W. Fairweather, and F. H. Slinger. B.P.633,484 of 22/11/1946: 19/12/1949. (5) S. Coffey, D. A. W. Fairweather, and F. H. Slinger. B.P.633,485 of 25/11/1946: 19/12/1949. (6) S. Coffey, D. A. W. Fairweather, and D. E. Hathway. B.P.633,486 of 25/11/1946: 19/12/1949. (7) D. G. Wilkinson. B.P.633,487 of 4/12/1946 and 14/11/1947: 19/12/1949. (8) A. C. Robson and F. H. Slinger. B.P.633,492 of 28/3/1947: 19/12/1949. (9) S. Coffey, D. A. W. Fairweather, and D. E. Hathway. B.P.633,493 of 28/3/1947: 19/12/1949. (10) and (11) F. H. Slinger. B.P.633,498 and 633,469 of 5/5/1947: 19/12/1949. (12) D. A. W. Fairweather and F. H. Slinger. B.P.633,501 of 17/5/1947: 19/12/1949. (13) F. H. Slinger. B.P.633,502 of 17/5/1947: 19/12/1949. (14) and (15) D. A. W. Fairweather. B.P.633,504 and 633,505 of 21/5/1947: 19/12/1949. (16) S. Coffey, G. W. Driver, D. A. W. Fairweather, and F. Irving. B.P.633,513 of 2/7/1947: 19/12/1949 (addition to B.P.610,117). These inventions relate mainly to a new method for preparing sulphuric esters of the leuco derivatives of anthraquinone and related vat dyes the feature of which is that instead of using a tertiary base (*e.g.*, pyridine) in conjunction with sulphur trioxide or chlorosulphonic acid and a metal an amide containing the group $-CONR_2$ is employed, *e.g.*, dimethylacetamide and tetramethylurea. (1) The claim is for the sulphuric ester of the leuco derivative of 1:4-di-(*p*-methanesulphonylbenzoylamino)-anthraquinone. (2) Twenty-four examples are given of the application of the method to vat dyes and anthraquinone dye intermediates. (3) Ten examples are given of derivatives of carbazoles that contain two or more anthraquinone nuclei and one or more benzoylamino groups as substituents; the dyes give orange to brown shades on textiles. (4) The claim is for the sulphuric ester of the leuco derivative of 1-benzoylamino-4-*p*-methanesulphonylbenzoylaminoanthraquinone. (5) The leuco sulphuric ester of 1:1':5:1"-trianthrimide-2:2':6:2"-carbazole is claimed.

(6) Five examples refer to dyes in which two anthraquinone nuclei are linked at the α-positions by a group $-NH\cdot CO\cdot R\cdot CO\cdot NH-$, *e.g.*, terephthal-4:4′-dibenzoylamino-1:4′-dianthraquinonylamide. (7) The claims relate to dark brown thioindigoid dyes, *e.g.*, 4:7-dichloro-(2:1)-naphthindole-2:2′-(2:1)-naphthathionaphthene-indigo. (8) The vat dye or anthraquinone intermediate is reduced by means of zinc dust in the presence of ammonia or a primary or secondary amine and the metallic derivative is sulphated as above. (9) Sixteeen examples are given in which the above sulphating agent is applied to vat dyes or anthraquinone intermediates, existing in a hydroxyketo form, in the presence of a nitrogenous base having a dissociation constant of not less than 10^{-7} at 25° C. (10) and (11) These inventions relate to dyes of the dibenzanthrone and halogenated anthanthrone series. (12) The claim is for leuco sulphuric esters of the 6-acylamino or 6-arylamino derivates of 3′:4′-phthaloylacridones. (13), (14), (15) and (16). In these claims the method of sulphation is applied to vat dyes with highly complex ring systems, including anthraquinone nuclei. C.

Leuco Vat Dye Sulphuric Ester Printing Paste. A. Topham and Imperial Chemical Industries Ltd. B.P.633,536 of 26/1/1948: 19/12/1949. The claim is for the addition to printing pastes containing a sulphuric ester of a leuco vat dye (or its Na or NH_4 salt) of a compound containing a sulphonic acid group and a guanidine group, *e.g.*, phenylguanidine-*p*-sulphonic acid, which is made by condensing sulphanilic acid with cyanamide. C.

Phthalocyanine-isothiouronium Dyes: Application. K. Butterworth, E. J. Vickers, and Imperial Chemical Industries Ltd. B.P.633,602 of 19/1/1948: 19/12/1949. The claim is for the use on cotton of isothiouronium dyes obtained, for example, by the reaction of tetramethylthiourea urea with (*a*) copper tri-(chloromethyl)-phthalocyanine, (*b*) bis-(chloromethyl)-dibenzanthrone, or (*c*) bis-(chloromethyl)-isodibenzanthrone. The dyebath is made up with an aliphatic acid (*e.g.*, acetic or lactic) and an alkali salt of a weak acid (*e.g.*, Na acetate) is gradually added. The dyed cotton is finally washed in a dilute soda solution. Of the above examples, (*a*) gives a turquoise shade, (*b*) navy blue, and (*c*) violet. C.

Algosol Dyes: Application in Photographic Printing. L. R. Stewart. B.P. 633,634 of 21/1/1947: 19/12/1949. A method of photographic printing on fabric, leather, paper, *etc.*, depends on the fact that the leuco ester dyes known as "Algosols" become insoluble on exposure to light. The impregnated material is exposed behind a photographic negative and the unaffected dye is washed away. C.

Naphthaquinone-imine Dyes: Production. P. May (for Sandoz Ltd.). B.P. 633,663 of 29/7/1947: 19/12/1949. Soluble dyes (for animal fibres) of the naphthaquinone-imine series are obtained by heating an aromatic amine containing at least one sulphonic and/or carboxylic acid group, in the presence of a diluent and an acid-binding agent, with a halogenated napthaquinone-imine. A list of such derivatives of a brominated 5-amino-8-hydroxy-1:4-napthaquinone-1-imine is given, together with the shades produced on wool in an acid bath, and by the after-chroming and the metachrome techniques, these processes leading to various greys. C.

Cellulose Acetate Textiles: Dyeing with Indigosol Dyes. Textron Incorporated. B.P.633,717 of 14/2/1947: 19/12/1949 (Conv. 12/3/1946). Indigosol dyes give dyeings on cellulose acetate that are fast to washing and bleaching if the solution of the dye is acidified with a mineral acid (*e.g.*, sulphuric, or, preferably, a mixture of sulphuric and formic and/or acetic acids), and the shade is developed with nitrous acid. The depth of shade depends on the proportion of the acids in the first bath and this is shown in tables of results of dyeing and fastness tests with seven Indigosols ranging from yellow to purple. A standard shade (described as the "G" dyeing) was given by a 2 per cent. solution of the dye in a bath containing 8¼ per cent. of formic acid (85 per cent. concentration), 8¼ per cent. of acetic acid (84 per cent.) and 8¼ per cent. of sulphuric acid (20° Bé). In a few cases the tables show that other mixtures of the acids led to deeper shades. Without the acids, the Indigosols failed to dye the yarn. C.

Wool: Pre-treatment. W. E. Saxby (Nottingham) Ltd. B.P.638,176 of 31/5/1950. Textile material of or containing wool is treated, subsequent to scouring, bleaching or chlorinating, with an aqueous solution containing up to

10 per cent. boric acid on the weight of wool. The wool is thereby protected in neutral dyeing from the harmful effect of traces of alkali either from soft water or from previous processes. Further the process enables level dyeings to be obtained using dyes hitherto regarded as unsuitable. The process may also be used for rendering wool suitable for further treatment, *e.g.*, chlorination. W.

Felts for Papermaking Machines. The Orr Felt & Blanket Co. B.P.642,378 of 30/8/1950. A felt for papermaking is impregnated with 10-25 per cent. of its weight of a polymerised mixture of polyvinyl alcohol and butadiene acrylonitrile copolymer, followed by curing at 200-225° F. for approximately 3 hours. The treated felt has a high abrasion resistance and a high water-absorbing capacity. W.

Papermaker's Felt. R. J. Lee. B.P.642,788 of 13/9/1950. A papermaker's felt consists of wool and ramie fibres from the China grass plant. The quantity of wool should be at least 5 per cent. by weight, of the felt. The hairs on the surface of the ramie are not removed, and both wool and ramie are exposed on the surface of the felt, which has superior water-absorbing properties and great durability. W.

Papermaker's Felt. R. J. Lee. B.P.642,789 of 13/9/1950. A papermaker's felt consists of wool and Saran fibre (a vinylidene chloride-vinyl chloride copolymer in which the vinylidene chloride predominates). The quantity of wool is preferably at least 15 per cent., by weight, of the felt. The felt has greatly increased wearing and water-absorbing properties and very high resistance to the disintegrating effects of chemicals and bacteria. W.

Wool: Shrinkproofing. J. B. Rust (to Montclair Research Corporation). U.S.P.2,491,584 of 20/12/1949. An emulsion for shrinkproofing wool is produced by the interpolymerisation of a compound having the formula $CH_2=CR-CR_1=CH_2$ (R is selected from the group of hydrogen and lower alkyls, and R_1 is selected from the group of hydrogen, lower alkyls and halogen) with an unsaturated ketone having the formula $CH_2=CR_2-CO\cdot R_3$ (R_2 is selected from the group of hydrogen, alkyls and aryls, and R_3 is alkyl or aryl). Examples relate to the use of butadiene 1·3 with various ketones. The bath also contains a conditioning electrolyte, which allows the deposition of the copolymer on the fibres. W.

Wool, Shrinkproofing. R. Bloch, L. V. Farkas, K. Goldschmid, M. Lewin, I. Schnerb and P. Goldschmidt. U.S.P.2,508,007 of 16/5/1950. Wool is immersed in an aqueous liquor containing free hydrochloric acid and water-soluble bromate in excess of the amounts of acid and bromate liable to be absorbed by the wool. The treatment is controlled so that 6·4 to 16 grams of bromate ion per kilogram of air-dry wool are consumed. After-treatment consists of rinsing, washing with dilute ammonia, soaking in bisulphite solution, and again rinsing. The treatment may be combined with milling. W.

5—ANALYSIS, TESTING, GRADING AND DEFECTS

(A)—Fibres

Jute Fibre: Acid Value Determination; Rôle of Cationic Ash. H. Chatterjee. *J. Textile Institute*, 1950, **41**, T243-248. An investigation has been carried out to determine the effect of cationic ash on the measurement of the carboxyl content of jute fibres by the silver absorption method.[1] Acid values (using silver nitrophenolate) and cationic ash contents have been determined for various acid- and alkali-treated samples of defatted jute. Results are presented and these show that different basic radicals have different affinities for the carboxyl groups of the fibres and in a salt solution the affinity is in the increasing order of Na<Ag<Mg, Ca, or Ba. In order to obtain the most accurate results for acid value it is necessary, therefore, to ensure that the carboxyl groups are in the unneutralised state and are not partly or wholly present as sodium or other salt. ([1] *J. Textile Institute*, 1948, **39**, A217.) C—5A.

Specific Surface of Jute: Air Flow Method of Determination. M. M. Roy, R. R. Mukherjee, and M. K. Sen. *J. Textile Institute*, 1950, **41**, T249-254. An apparatus for measuring the specific surface of jute by the air flow method has been constructed. The specific surface of jute is about 1,000 sq. cm./c.c. and

the value agrees with that measured microscopically. The *K* value (the constant in the Kozeny flow-equation) for jute is 5·17 which is higher than the values for cotton, wool, etc., and nearly coincides with the factor for granular beds. C—**5A.**

Jute: Determination of Lignin Content. H. J. Callow. *J. Textile Institute*, 1950, **41**, T255-266. Determination of lignin by the 72 per cent. sulphuric acid method is based on the principle of removing the carbohydrates by acid hydrolysis and weighing the residual lignin. The treatment is complicated because acid-insoluble products which are collected with, and weighed as, lignin are formed by interaction of the lignin and furfural liberated from the hemicelluloses on treatment with acid. The rate of formation of these complexes has been investigated by treating finely powdered jute fibre with 72 per cent. sulphuric acid for extended times at 2°, 18°, and 30° C., and determining the increase in yield of lignin. The curve relating yield of residue to time of treatment shows a minimum, and the effect of temperature on this minimum value has also been studied. The results show that strict temperature control should be maintained during determination of lignin with 72 per cent. sulphuric acid and a standard method for determining the lignin content of jute has been proposed. C—**5A.**

Wool Tops Mechanical Testing. R. E. Biggin. *Canadian Text. J.*, 1950, **67**, No. 21, 56-59. Equipment necessary for fibre diameter and fibre length testing is described. Some of the factors which affect the accuracy of results are discussed. The test procedures are described, and U.S. fibre diameter standards for wool tops are tabulated. W—**5A.**

Wools of Different Geographical Origins: Felting Properties. A. M. Sookne, H. Bogaty and M. Harris. *Text. Res. J.*, 1950, **20**, 637-642. The felting behaviour in a top shrinkage test (*Text. Res. J.* 1950, **20**, 270; *J. Textile Institute*, 1950, **41**, A477) of 11 "pure" tops and a group of commercial blended tops has been investigated. Only small differences were found among the samples in the results of this test. These small differences are correlated with staple length, the longer fibres promoting felting, which was apparently unaffected by fibre diameter. Laundering tests performed on socks made from 4 of the "pure" wools of different geographical origin revealed no appreciable difference among them. Differences between single-fibre mechanical and frictional properties of the 11 wools were also found to be small. W—**5A.**

(B)—YARNS

Textile Institute Annual Conference, 1950. Anon. *Text. Mercr.*, 1950, **122**, 959-961, 981-987, 1008-1021, 1055-1060; **123**, 21-28, 71-73, 187-191. *Text. Whly*, 1950, **45**, 1429, 1443-52, 1514-24, 1572-82, 1644-46; **46**, 22-30, 94-96. Reports are given of a conference on the "Causes, Measurements and Effects of Yarn Irregularities" with summaries of the various papers and discussion. C—**5B.**

Cotton Yarns: Effect of Rate of Extension on Strength and Extension. R. Meredith. *J. Textile Institute*, 1950, **41**, T199-224. The influence of yarn structure and variety of cotton on the change with time of strength, breaking extension and compliance, has been investigated. It is found that (i) the strength decreases linearly with increase in log (time to break) except at short times where it becomes less sensitive to time changes; (ii) the low-twist singles yarn shows a large percentage change in strength but the same absolute change as the other yarns tested; (iii) over the range of times to break from 10 seconds to 3 hours, the strength of a cotton yarn decreases by 9 per cent. for a 10-fold increase in time to break; (iv) apart from low-twist singles yarn, in which there is appreciable fibre slippage, all yarns show a maximum breaking extension for some time to break between 1 and 10 seconds, and approximately equal values at 0·01 second and 1 hour; (v) the compliance, i.e., extension per unit load, decreases linearly with increase in the logarithm of the rate of extension except for the singles low-twist yarn. Application of data to the correction of test results to a time break of 10 seconds is illustrated by examples. C—**5B.**

Nylon Yarn: Tensile Strength and Elongation. E. I. du Pont de Nemours and Co. *Rayon synth. Text.*, 1950, **31**, July, 64. Figures showing the average tenacity and elongation ranges are tabulated for conditioned nylon yarns of various deniers from 15 to 260. The effects of extremes of heat and cold on the physical properties of nylon yarn are summarised. C—**5B.**

"Mercer" Yarn Tension Meter and Package Density Meter. T. Mercer Ltd. *Text. Merc.*, 1950, **123**, 259-260. Illustrations and brief details are given of (1) the "Mercer" yarn tension meter, and (2) the "Mercer" yarn package density meter. (See also *J. Textile Institute*, 1950, **41**, A184.) C—**5B.**

Electronic Yarn Evenness Tester. P. H. Walker. *Text. Merc.*, 1950, **123**, 134, 158. A brief account is given of a regularity tester that depends on a measurement of the change in capacity caused by introducing material into the gap of a fixed air condenser. It embodies a modified Fielden dielectric comparator and gives a continuous record of variations in slivers, rovings and yarns by means of a cathode ray oscillograph or pen recorder. C—**5B.**

Yarn Irregularity Testing. N. A. Whiffen. *Text. J. Austral.*, 1950, **25**, 430-431. Factors associated with yarn irregularity are listed, and methods of measuring irregularity are discussed. W—**5B.**

Spinning Oil: Determination. *Underwear & Stockings*, 1950, **4**, (10), 9. Note on use of radio-active isotope in investigating variations in density of spinning oil on nylon yarn. Ethylene dibromide containing radio-active bromine is incorporated in the oil, and the weight of oil per cm. can be determined photographically down to 10^{-10} g./cm. The distribution of oil along the thread can be observed by use of a fast X-ray film. H—**5B.**

(C)—FABRICS

Rayon Fabrics: Softness. A. F. Cheshire. *Brit. Rayon & Silk J.*, 1950, **27**, August, 57-58. Some factors that affect the soft-handle qualities of rayon fabrics are discussed. These include method of spinning (by coagulation or solidification), mercerisation, bleaching, dyeing, and drying. The application of chemical softening agents is discussed. C—**5C.**

Textile Mills: Quality Control System. F. L. Byrd. *Text. Industr.*, 1950, **114**, *June*, 95-98. A quality control system that has been found useful in weaving and preparatory departments of textile mills is described. Record sheets, cloth tags, quality tickets, etc., are shown and their uses explained. C—**5C.**

Thin Plastic Films: Rupture Strength Test. J. J. L. Chen. *Rev. sci. Instrum.*, 1950, **21**, 491-492. A method for testing the rupture strength of thin plastic films is described briefly. A pressure chamber is closed at one end by means of a plate containing a number of differently sized holes. The film is fixed over this plate and the pressure inside the chamber is raised until the film is ruptured at the largest hole. This hole is then closed and the procedure repeated for the next largest hole, and so on for all the holes. From the observed pressure for rupture, the diameter of the respective hole and the thickness of the film, a rupture constant is calculated. The rupture constants of a few materials, including nylon are given. C—**5C.**

Wear Testing. D. L. C. Jackson. *Text. J. Austral.*, 1950, **25**, 435-8. The factors constituting wear in fabrics are discussed, and the various types of wear-testing machines described, including two recently developed in the U.S.A. W—**5C.**

Comparative Resistance to Rain of Various Wool Fabrics. A. M. Sookne, F. W. Minor and M. Harris. *Amer. Dyes Rept.*, 1950, **39**, 548-554. Fourteen wool fabrics (*a*) of widely different structural and physical properties were tested in an artificial three-inch-per-hour rain. The resistance to penetration and absorption of water of these fabrics was determined, and in addition, the effect of a water-repellency treatment on these properties was investigated. A number of the structural and physical properties of the fabrics were measured, and the correlation between these properties and resistance to rain was examined. The results of the tests in the artificial rain were also compared with the results of laboratory tests for resistance to water. The water-repellency treatment improved the resistance to penetration and to absorption of water in every case. The resistance to penetration increased very rapidly with increasing weight and thickness of the wool fabrics. Knitted materials performed relatively poorly when compared with woven fabrics in the same range of weight. No correlation was found between penetration in the rain-room and any of the conventional laboratory tests. The absorption of water in the rain-room varied directly with the thickness of the fabrics, for both repellent and non-repellent samples. A close relationship was found between the results of laboratory tests of water absorption (modified dynamic absorption test) and absorption of water in the

rain-room. The other laboratory tests yielded no correlation with the absorption properties in rainfall of the wool fabrics. W—5C.

(D)—Other Materials

Artificial Textiles: Processing; Use of Sodium Silicates. A. B. Middleton. *Rayon synth. Text.*, 1950, **31**, June, 75-76. The chemical composition and properties of some commercial silicates of soda are outlined and uses of these substances in the processing of artificial textiles are indicated. These include the box and jig scouring of viscose rayons, as additives to peroxide bleaching baths, as "weighting" for rayons, for sizing and coating, and in the printing and dyeing of rayon fabrics. C—5D.

Detergents on Test. F. D. Snell. *Brit. Rayon & Silk J.*, 1950, **27**, August, 45-46. Investigations into the efficiency of several types of detergents are described. The detergents discussed are soap, alkylaryl sulphonates, alkyl sulphonates, and non-ionic detergents. Particular reference is made to "builders" which are almost invariably added to the detergent proper. The use of a builder increases the efficiency of the performance of the active agent. C—5D.

Electronic Textile Control and Testing Instruments. ("Progress of Electronics in Industry.") Anon. *Text. Mfr.*, 1950, **46**, 248-250. A report is given of an exhibition of electronic devices and scientific apparatus arranged by the Institution of Electronics, in Manchester. Mention is made of the Fielden "Drimeter" and "Moistektor", radio-frequency heaters, the Dawe "Drytester" and "Stroboloom", the "Cintel" equipment for detecting the presence of metal, the "Beta" thickness gauge, and various devices for controlling electric motors. C—5D.

7—LAUNDERING AND DRY-CLEANING

Cotton: Adsorption and Exchange of Calcium; Measurement by Radio-isotope Tracer Methods. J. M. Lambert. *Industr. Engng Chem.*, 1950, **42**, 1394-1398. The physical and chemical properties of cotton which are important in practical detergency are discussed. Data are given for the adsorption of surface-active agents on cotton. Radio-isotope tracer methods are described for measuring the adsorption and exchange of calcium on cotton as it occurs in laboratory wash tests simulating hard-water laundering. Results are given for several cotton detergents in multicycle wash tests. [43 references.] C—7.

Cotton: Detergency Tests. J. M. Lambert and H. L. Sanders. *Industr. Engng Chem.*, 1950, **22**, 1388-1394. Conventional testing methods for the evaluation of detergents on cotton fabrics are reviewed and their limitations are discussed. Data are presented for multicycle wash tests with several cotton detergents in which roll-towels were soiled in actual use, then washed in a home washing machine, and examined in the laboratory. These results are substantiated by field tests, but do not agree with results of single cycle swatch tests. [51 references.] C—7.

Melamine Resins for Laundering. A. G. Arend. *Chem. Prod.*, 1950, **13**, 310-311. When applied to textile materials, melamine resins provide proofing against water, moisture, fungi, insects, and to some extent, fire. In the laundering industry, melamine resins are being used in place of starch. The advantages of the use of the resins for this purpose are indicated. C—7.

8—BUILDING AND ENGINEERING

(A)—Construction and Maintenance of Buildings and Plant

Laminated Wood for Textile Machinery Parts. New Insulation Co. Ltd. *Brit. Rayon & Silk J.*, 1950, **27**, August, 61-62, 87. An improved form of wood, known as "Permali", combines the principles of lamination, impregnation, and compression. The properties of "Permali" are indicated and some of its uses for the fabrication of textile machinery parts are described. These include picking sticks, raceboards, shuttles, and gears. C—8A.

Bobbin Washing Machine. Anon. *Text. Industr.*, 1950, **114**, June, 101-102. An automatic bobbin-washing machine is described. C—8A.

Bobbin Handling System. ("Quill Conveyor.") Anon. *Text. Industr.*, 1950, **114**, July, 90-92. An American cotton mills has installed an overhead conveyor system for the transport of bobbins. The conveyor takes empty bobbins from

the stripper to various supply points. A brief illustrated description of the installation is given. C—8A.

Loom Bobbins: Maintenance. H. E. Wentrich. *Rayon synth. Text.*, 1950, **31**, July, 47-48. Damaged bobbins can give rise to many faults during weaving. Some causes of bobbin damage are indicated and suggestions made for the maintenance of bobbins and the reclamation of damaged ones. Careful stripping is emphasised. The Nash machine for the polishing and relacquering of bobbins is mentioned and illustrated. C—8A.

Artificial Yarns: Requirements for Suitable Guides. J. B. Shacklett. *Rayon synth. Text.*, 1950, **31**, June, 65-66. The greater abrasiveness and higher speeds of running of artificial fibres, compared with natural fibres, necessitate the use of special thread guides. The development of suitable guides is briefly discussed with special reference to a ceramic material known as AlSiMag 192. The properties and uses of this material are summarised. C—8A.

Hydro-extraction in Textile Processing. Anon. *Text. Mfr*, 1950, **76**, 327, 336-337. A discussion is presented of the special features and adaptability of the hydro-extractor as a drying auxiliary, and also its wide uses in the wet treatment of yarns and fabrics. Mention is made of the loading of the extractor, the effect of hydro-extraction on the variability of rayon crêpe twist, fabric preparation for printing, yarn dyeing, and textile printing after-treatments. C—8A.

Small Load Hydro-extractor. T. Broadbent and Sons, Ltd. *Text. Wkly*, 1950, **46**, 706. A new hydro-extractor for laboratory or laundry use is announced. This machine has a basket of 21 inch diameter and can handle up to 25 lb. of washing. A feature is the hydraulic braking system which brings the extractor basket to rest in 30 seconds. C—8A.

Textile Institute: Mather Lecture 1950: "Sir William Mather". F. Scholefield. *J. Textile Institute*, 1950, **41**, P306-P322. The 1950 Mather Lecture of the Textile Institute, "Sir William Mather—His Contribution to the Textile Industry," is reproduced in full, and illustrated. C—8A.

Sewing Machines. W. Bland. *Fibres*, 1950, **11**, 251-253, 321-322. The historical development of the sewing machine is sketched and then some aspects of modern machine design and operation are dealt with. Problems associated with the high speeds attained by both lockstitch and chainstitch machines (*e.g.*, wear on thread and lubrication) are discussed. The latest type of lockstitch machine operates at 5,000 stitches per minute and has a semi-force feed lubrication. The development of power transmission in sewing machines is also discussed. C—8A.

Textile Process Control Instruments. L. Walter. *Text. Merc.*, 1950, **122**, 1047-1055; **123**, 17-19, 28; 57-62, 65; 107-112; 137-142; 221-229; 294, 297-298, 300, 302. The writer discusses the use of control instruments in the processing of textiles under (1) the characteristics of the processes (including heat flow); (2) the characteristics of the instruments (including the mechanisms and functions of controllers), and (3) practical applications of automatic control (including dye vat control, control of space heating, steam pressure control, liquid level control, automatic speed control, humidity control, and programme or time-cycle control). C—8A.

Electronic Instrumentation: American Practice. R. K. Vinycomb. *Instrum. Pract.*, 1950, **4**, 469-475; (to be contd.). The author surveys American practice in electronic instrumentation under four sections, viz., (i) vibration measurement, (ii) strain measurement, (iii) pressure measurement, and (iv) sound measurement. Under (i), the following instruments are considered: linear vibration transducers, Statham transducers, piezo-electric transducers, vacuum tube accelerometer, displacement transducers, non-seismic transducer, and gramophone pick-ups. C—8A.

Modern American Rayon Mill. ("New Harris Plant of Greenwood Mills.") H. D. Holmes. *Rayon synth. Text.*, 1950, **31**, July, 42-44. A brief illustrated description is given of a new American mill for the production of rayon textiles. C—8A.

(D)—Power Transmission

Textile Mills: Electric Power Systems. Anon. *Text. Mfr*, 1950, **76**, 341-342, 343. The points which arise when planning the installation of electrical power, or an addition to an existing installation, are considered. A.C. and D.C. systems are discussed and typical installations layouts are shown. C—8D.

Mule and Roving Spindle Drives. Anon. *Text. Merc.*, 1950, **123**, 264. Endless elastic belts of new design for driving mule and roving spindles are announced. The cross-sectional shape of the belts, resembles a flat-sided oval, and is such that "rolling" of the belt while in motion is prevented. Loom heald straps made by the same firm (Flexicon Ltd.) are also mentioned. They are impregnated with a resistant coating and have a long life. C—**8D.**

Sizing Machines: Methods of Drive. ("Modern Slasher Drives.") Anon. *Text. Industr.*, 1950, **114**, June, 104-114. Modern types of sizing machine drives are described under the headings of electrical, mechanical, and electro-mechanical. In each case, design and construction, operation, and maintenance are discussed. Several illustrations of equipment are shown. C—**8D.**

Transmission Belting: Fundamental Factors. P. W. Peel. *Text. Wkly*, 1950, **46**, 308-314. A concise account is given of the factors to be observed in specifying a belt for a particular drive, including "rating", arc of contact, angle of drive, danger of excessive tension, elasticity and creep, minimum diameter of pulleys, and relation of width of belt to horse power. C—**8D.**

Belt Drives: Driving Belt Economy. P. W. Peel. *Text Wkly*, 1950, **46**, 692, 694. Some practical hints are given for the care of leather driving belts. The choice of belt dressing is important and the relative merits of various types of dressing are considered. Simple tests to determine the suitability of dressings are described. C—**8D.**

Gears in Power Transmission. P. W. Peel. *Text. Wkly*, 1950, **46**, 560, 562, 564. Three types of power transmission by gears are considered, viz., the gear motor (motor combined with speed reduction unit), the epicyclic gear, and the friction drive. C—**8D.**

(G)—Heating, Ventilation and Humidification

Heat Transmission in Coils. H. Inglesent and J. A. Storrow. *Industr. Chem.*, 1950, **26**, 313-316. Earlier extrapolation analyses of the over-all heat transfer coefficients for coils immersed in unstirred liquid have been reviewed in the light of recent work on the effect of Reynolds number on the inside surface conductance for cooling water. Using the corrected velocity functions, the outside surface conductances for transfer by natural convection from the bath liquid have been shown to be considerably higher than those for single horizontal cylinders under the same conditions. C—**8G.**

Air Conditioning. E. W. Baldry. *J. Textile Institute*, 1950, **46**, P288-298. The importance of a controlled atmosphere for the processing of textile materials is indicated. "Full" air conditioning (humidity control with refrigeration) and "partial" conditioning (no refrigeration) are considered briefly on the basis of single physical laws. The function of the central plant of the conditioning system is discussed and diagrams are given showing the relative humidity and wet- and dry-bulb temperature changes over the cycle of operation. Information is also presented on the design of plant, air cleaning, and controls. C—**8G.**

Air Conditioning and Refrigeration System. Anon. *Text. Industr.*, 1950, **114**, June, 139, 141. A brief illustrated description is given of the air conditioning and refrigeration system installed in an American fully-fashioned hosiery factory. C—**8G.**

(H)—Water Purification

Textile Process Water. H. Miedendorp. *Rayon synth. Text.*, 1950, **31**, June, 85-87. Common impurities found in water are indicated and methods of removing them to obtain pure water for textile processing are described briefly. These include zeolite and hydrogen zeolite water softeners, and the filtration of water. C—**8H.**

Textile Process Water: Treatment. E. T. Laurin. *Rayon synth. Text.*, 1950, **31**, May, 103-105; June, 81-82; July, 81-83. The impurities in water which are of significance to textile processes are discussed. The importance of using pure water in textile mills is considered and methods of water softening are briefly described. These include the lime-soda method, the base exchange process, and the use of Calgon. The controlling effect of Calgon on the corrosive action of water is discussed including an explanation of the mechanism of its action in this respect. The respective water problems of woollen, cotton or rayon, and hosiery mills are surveyed briefly. In an appendix, the Schwarzenbach titration methods for the determination of total hardness and of calcium are described. C—**8H.**

PATENT

Uptwister Spindle Driving Mechanism. J. A. Lloyd (Rochdale) Ltd. and R. A. Lloyd. B.P. 632,880 of 7/10/1947: 5/12/1949. A single beam of inverted channel section is arranged between each pair of upright supports of an uptwister and is of such a width that when the spindle brackets on each side of the frame are attached to the flanges of the beam the brackets on one side will be spaced the desired distance from those on the other side. Each beam carries a horizontal pulley the axis of which is midway between the two sides of the beam and which is of such a diameter that it will engage the inner faces of the spindle driving belt on either side of the frame to maintain pressure contact between the belt and the spindles. The shafts carrying the take-up rollers for rotating the bobbins on to which yarns are wound are made in lengths equal to the distance between the upright supports and each is so mounted and connected to adjacent lengths that it can be detached without displacing other lengths of rollers. C.

9—SCIENCE

Cotton Growing: Use of Maleic Hydrazide as Herbicide. H. B. Currier and A. S. Crafts. *Science*, 1950, **111**, 152-153. Tests show that maleic hydrazide (used in form of diethanolamine salt) may be useful as a selective herbicide. Cotton is apparently unaffected by this compound (except when very young in which case growth is inhibited) but grasses are quickly killed by application of a maleic hydrazide spray. This property may be of value in keeping cotton crops free from weeds. C—9.

New Cellulose-Destroying Fungi. L. M. Ames. *Mycologia*, 1949, **41**, 637-648 (through *Rev. appl. Mycol.*, 1950, **29**, 323-324). Nine species of *Chaetomium*, cellulose-destroying fungi, have been isolated from rotting military material and equipment such as tents, mattresses, paper cartons and wood. The characteristics of the nine species are described. C—9.

Carboxymethyl Cellulose: Enzymic Hydrolysis; Measurement by Changes in Viscosity. H. S. Levinson and E. T. Reese. *J. gen. Physiol.*, 1950, **33**, 601-628. The enzymic hydrolysis of soluble cellulose derivatives may be followed by observation of changes in fluidity. In general, results obtained by use of this method are similiar to those obtained using the reducing sugar technique, indicating that the same enzyme system is measured by the two methods. Changes in the degree of polymerisation of the substrate may be followed within certain limits of molecular size. Experiments have been carried out on carboxymethyl cellulose (CMC), and results are presented that indicate that a random splitting of CMC occurs during enzymic hydrolysis, with a decrease in intrinsic viscosity and an increase in reducing sugars. An alternate explanation to the cellulose-cellobiose-glucose theory of cellulose hydrolysis is postulated. C—9.

Amylose: β-Amylolysis; Mechanism. E. J. Bourne and W. J. Whelan. *Nature*, 1950, **166**, 258-259. The work of Swanson and Cori[1] and of Cleveland and Kerr[2] on the β-amylolysis of amylose is discussed. These authors hold the view that during β-amylolysis, an enzyme molecule attaches itself to an amylose molecule, and by stepwise removal of maltose units degrades it completely before it attacks another polysaccharide chain ("single-chain" theory). The present authors consider that the available evidence supports the hypothesis of "multi-chain" degradation, according to which collisions between β-amylose molecules and substrate chains effect the liberation of only one maltose unit at a time from each chain. ([1]*J. Textile Institute*, 1948, **39**, A266 and A268; [2]*J. Textile Institute*, 1948, **39**, A569; 1950, **41**, A156.) C—9.

Proteolytic Enzymes: Activity; Determination by means of Dyes. B. Carroll. *Science*, 1950, **111**, 387-388. Simple anionic dyes may be used as indicators for following the course of the proteolytic reaction. The dyes combine with native protein albumin but not with proteolytic enzymes. Proteins attacked by the enzymes lose their ability to combine with the dyes. Quantitative activity measurements are made by estimating the concentration of native protein in the presence of the proteolytic enzyme as a function of time, using an empirical curve as in spectrophotometric analysis. C—9.

Cecropia Silkworm: Cytochrome System; New Component. R. C. Sanborn and C. M. Williams. *J. gen. Physiol.*, 1950, **33**, 579-588. A hitherto undescribed

cytochrome component, termed cytochrome-*x*, has been discovered in the tissues of the *Cecropia* silkworm, where it apparently replaces cytochrome-*b* and -*c*. The enzyme can be demonstrated only in the larval stage of the insect and undergoes breakdown prior to pupation. It occurs in highest concentration in the walls of the mid-gut. Evidence is presented, based on spectroscopic and manometric studies in the presence of various substrates and inhibitors, that cytochrome-*x* is a single component which combines certain of the properties of cytochrome-*b* and -*c* and of succinic dehydrogenase. C—9.

Algin from *Sargassum*. F. W. Davis. *Science*, 1950, **111**, 150. The algin contents of four varieties of the seaweed *Sargassum* have been determined. Results are also given that indicate the effect of the temperature of extraction on the observed algin content. C—9.

Soyabean Protein: Electrophoretic Analysis. D. R. Briggs and R. L. Mann. *Cereal Chem.*, 1950, **27**, 243-257. Electrophoresis patterns for water extracts of defatted soyabean meal have disclosed the presence of at least seven electrophoretically distinct proteins. Glycinin, the globulin commonly considered to be the principal protein of soyabeans, has been found to be a mixture of components which constitute about 75 per cent. of the total soyabean protein. The composition of globulin preparations has been investigated and found to vary considerably depending on the method of isolation. C—9.

Soyabean Proteins: Effects of Solvent and Heat Treatments. R. L. Mann and D. R. Briggs. *Cereal Chem.*, 1950, **27**, 258-269. The effects of heat and of methanol and ethanol extraction of soyabean meal on the peptisability of the soya proteins have been studied electrophoretically. Hot and cold methanol or ethanol extraction of the meal reduces the subsequent extractability with water or salt solutions of all the protein components, but the effect is most pronounced on the globulin components. Heating aqueous extracts of soyabean meal results in the precipitation of protein in varying amounts, the quantity precipitated increasing with increase in temperature and with length of heating period. C—9.

Laminarin: Hydrolysis by Wheat β-Amylase. T. Dillon and P. O'Colla. *Nature*, 1950, **166**, 67. Laminarin has been hydrolysed by wheat β-amylase to yield glucose (70 per cent.) and disaccharide. The rate of hydrolysis is slow, taking several days. It is suggested that amylopectins contain 1:3 linkages which are hydrolysed by the factor in wheat β-amylase that hydrolyses laminarin. C—9.

Natured and Denatured Insulin: Chain Configurations; Evidence from Infra-red Spectra. A. Elliott, E. J. Ambrose, and C. Robinson. *Nature*, 1950, **166**, 194. The C=O infra-red absorption bands of denatured and renatured insulin have been measured. These show that the frequency diminishes as a result of denaturation. Crystalline insulin was cast into a film from *m*-cresol solution and the C=O band was measured; the protein was then dissolved in formic acid and a fresh film cast and the C=O band was again measured. The curves obtained were similar to those for the denatured and renatured protein, respectively. The results are consistent with the view that renatured insulin consists of polypeptide chains in the same α-fold as synthetic α-polypeptides, and that denaturation is accompanied by extension of the chains into the β-configuration without rupture of disulphide linkings. C—9.

Quantitative Analytical Methods: Classification. E. J. Serfass, R. G. Steinhardt, Jun., and F. C. Strong. *Analyt. Chem.*, 1950, **22**, 966-969. Representative existing classifications of quantitative analytical chemical methods are critically surveyed and an improved classification is presented. C—9.

Chemical Analysis: Basic Operations. P. J. Elving. *Analyt. Chem.*, 1950, **22**, 962-965. The basic stages in the analytical process are discussed with emphasis on the problems of isolating the material in a state suitable for measurement of the desired component and of making the measurement itself. Fundamental principles of physical measurement as used in analysis are outlined. C—9.

Propylene Glycol: Determination of Purity. G. Middleton and R. E. Stuckey. *Analyst*, 1950, **75**, 406-410. A description is given of a test using the critical solution temperature of propylene glycol and ether. By this method, the

presence of 0·1 per cent. of ethylene or dipropylene glycol, or similar amounts of water and ethyl alcohol in propylene glycol, can be determined. Experimental data are given. C—9.

Coupling Components in *p*-Toluene-Azoaryl Amide Dyes of Naphthol AS Series: Identification. L. Koch and R. F. Milligan. *Analyt. Chem.*, 1950, **22**, 1039-1040. A simple method has been developed for the identification of Naphthol AS type coupling components, by hydrogenating the pigment in dioxan-acetic acid with zinc dust, isolating the desired compound, and converting it into the *N*-benzoyl derivative. Experimental data are presented. C—9.

Sulphur Dioxide in the Atmosphere: Photo-electric Determination. M. Katz. *Analyt. Chem.*, 1950, **22**, 1040-1047. An illustrated description is given of a continuous, automatic analyser for sulphur dioxide which employs photo-electric cells and a recording potentiometer to indicate the increase in light transmittance of stable, blue, starch-iodine solutions after aspiration with contaminated air. The method is specific for sulphur dioxide in smelter areas where hydrogen sulphide is not likely to occur. C—9.

Reversed-Phase Partition Chromatogram Using Chlorinated Rubber. S. M. Partride and T. Swain. *Nature*, 1950, **166**, 272-273. A reversed-phase chromatogram using a commercial chlorinated rubber has been developed for the separation of the *N*-2:4-dinitrophenyl derivatives of amino-acids by partition between butanol and aqueous buffer. Values of *R* are given for a number of dinitrophenylamino-acids using butanol-saturated buffer of varying *pH* as the flowing solvent. C—9.

Sugars: Detection on Paper Chromatograms. W. E. Trevelyan, D. P. Procter, and J. S. Harrison. *Nature*, 1950, **166**, 444-445. A procedure for the detection of sugars on paper chromatograms is described. The developed chromatogram strip is passed through acetone containing silver nitrate, and dried. It is then sprayed with sodium hydroxide in ethanol, when reducing sugars form dense black spots of silver against a background of brown silver oxide. The silver oxide is removed with sodium hydroxide solution. Substances other than reducing sugars are detected by this method, *e.g.*, glycerol. A similar technique also for the detection of reducing sugars employs triphenyltetrazolium chloride, which in alkaline solution is reduced to the insoluble, intensely red, formazan compound. C—9.

Amino-Acids: Paper Chromatography. R. O. Atkinson, R. G. Stuart, and R. E. Stuckey. *Analyst*, 1950, **75**, 447. In the ninhydrin method for determining amino-acids chromatographically, it was observed that many amino-acids gave a reddish colour after irrigation with acid media and a bluish colour after irrigation with basic media. Glycine, asparagine, tyrosine, phenylaline, histidine, and tryptophan gave anomalous results in that they either did not yield a molar proportion of blue dye, or else gave only an orange-brown colour. The behaviour of these acids is discussed. C—9.

Amino-Acids, Peptides, and Amines: Fluorescence on Filter Paper. A. G. Woiwod. *Nature*, 1950, **166**, 272. The fluorescence of amino-acids, peptides, and amines on filter paper has been investigated. Crystals of amino-acids were examined in ultra-violet light. Aqueous solutions of these acids were mixed with an experimental cellulose powder, dried, and the resulting powders examined in ultra-violet light. The results indicate that fluorescence of amino-acids, peptides, and amines on filter paper arises through reaction with aldehydic groups derived from modified or short-chain celluloses present in the paper. C—9.

Fluorescence Microscopy: Use in Food and Drug Analysis. J. King and R. E. Weston. *Analyst*, 1950, **75**, 397-401. A simple method is described for using fluorescence microscopy in food and drug analysis. The advantages and applications of the method are discussed. Reference is made to the detection of vegetable and animal hairs. C—9.

Polarographic Cells with Fused-in Capillaries. G. S. Smith. *Analyst*, 1950, **75**, 440-444. Two new types of all-glass polarographic cells, with included capillaries and connections to reference electrodes, are described and illustrated. One type is specially suitable for operation in a thermostat bath. C—9.

Cathode-Ray Polarograph. F. C. Snowden and H. T. Page. *Analyt. Chem.*, 1950, **22**, 969-981. An illustrated account is given of an improved cathode-ray

polarograph. This instrument can be used as a qualitative and quantitative analytical tool, for both inorganic systems and many organic systems, and it is capable of following rapid, as well as slow, reactions of zero, first, and second order. The real potentialities of this instrument lie in its ability to follow and measure the rates of rapid reactions. Experimental data are presented. **C—9.**

Organic Bases: Titration in Non-aqueous Solvents. J. S. Fritz. *Analyt. Chem.*, 1950, **22**, 1028-1029. Organic bases may be accurately titrated in glacial acetic acid, benzene, chlorobenzene, nitrobenzene, chloroform, ethyl acetate, diethyl ether, light petroleum, and acetonitrile, using methyl-violet as the indicator. The titrant employed is a solution of perchloric acid in glacial acetic acid. Potentiometric titrations in most of the above solvents may be conveniently made with a *pH* meter using a glass-silver electrode combination without a salt bridge. Small amounts of water do not interfere, but larger amounts of water, alcohol, dioxan, and acetone should be absent. **C—9.**

Cotton Cellulose: Evaporation of Water. W. A. Bone and H. A. Turner. *J. Soc. Dyers & Col.*, 1950, **66**, 315-327. Experiments with purified cellulose, air, and water indicate that an increased activity of the system is shown at the "water-line". This is the narrow boundary region between wet and dry cloth which is formed when the lower end of a strip of bleached cotton fabric is dipped in water. Experimental data show that the cotton cellulose is modified to give two distinct types of product, viz., (*a*) one, soluble and transportable in water, brown in colour, markedly fluorescent in ultra-violet radiation, with enhanced reducing properties and (*b*) the other, solid, non-transportable in water, restricted to the boundary region, with higher cuprammonium fluidity and methylene-blue absorption than the original cellulose. The action is not originated, nor is it greatly affected, by light energy. Wide variations in the partial pressure of oxygen in the surrounding atmosphere cause little change in the apparent intensity of the brown line. **C—9.**

Configuration of Carbohydrates, Hydroxy-Acids and Amino-Acids. (A) P. Brewster, E. D. Hughes, C. K. Ingold, and P. A. D. S. Rao; (B) P. Brewster, F. Hiron, E. D. Hughes, C. K. Ingold, and P. A. D. S. Rao. *Nature*, 1950, **166**, 178-179; 179-180. (A) The configurations of the carbohydrate and hydroxy-acid series are expressed with reference to glyceraldehyde as standard, while serine is the standard of reference for configurations in peptides and amino-acids. Hitherto no conclusive proof of the agreement of these two standards has been given. The problem has now been solved by a kinetic method. A genetic chain has been established between glyceraldehyde and serine involving S_N2 substitutions (bimolecular nucleophilic substitutions) as follows (the symbol ~ means "corresponds in configuration to"): (+)-glyceraldehyde ~ (−)-glyceric acid ~ (−)-lactic acid ~ (+)-α-bromopropionic acid ~ (−)-alanine ~ (+)-serine. The agreement of the two standards is thus proved.

(B) The rules of unimolecular (S_N1) and bimolecular (S_N2) nucleophilic substitution have been applied to interconversions between the following types of compounds: (*a*) RCL,RBr; (*b*) ROH,ROAlk; (*c*) RNH. This has enabled the signs of rotation of amines to be related to their configurations, and has allowed the stereochemical course of many transformations which form or destroy amino-compounds, to be interpreted with certainty. The results of the work on six amines are summarised. **C—9.**

Linseed Oil: Oxidation; Temperature Effects. P. S. Hess and G. A. O'Hare. *Industr. Engng Chem.*, 1950, **42**, 1424-1431. The effects which differences in the reaction temperature exert on the induction period and on the bulk oxypolymerisation of raw linseed oil under otherwise constant conditions of air flow and agitation have been studied. Experimental results are in agreement with the free radical propagation theory of oil oxidation and appear to indicate the formation of an intermediate compound before oxidative increases in molecular weight. This compound may be of the chelate type and oxidative molecular weight increases may occur partly by association of such compounds to double molecules by hydrogen bonding. [26 references.] **C—9.**

Adsorption on Elastic Absorbent: Thermodynamics. T. L. Hill. *J. chem. Phys.*, 1950, **18**, 791-796. A thermodynamic treatment is presented of the problem concerning the relationship of the length of an adsorbent under constant tension to the amount of material adsorbed. Equations are derived which should be useful in the analysis of experimental data and theoretical models referring to

the adsorption of a one-compound gas on an elastic adsorbent. The problem is closely related to the thermodynamics of adsorption of a solute from a liquid solution on to an elastic adsorbent immersed in the solution (e.g., a myosin thread). C—9.

Silk Fibroin: Adsorption of Sulphanilamide. J. Coulombre and W. J. Moore. *J. phys. colloid Chem.*, 1950, **54**, 661-664. The adsorption of sulphanilamide on silk fibroin has been measured in unbuffered solutions at various temperatures. Adsorption isotherms are presented and analysed. C—9.

Copolymerisation. F. R. Mayo and C. Walling. *Chem. Rev.*, 1950, **46**, 191-287. An extensive review of the reaction of copolymerisation is presented. The first section deals with the theory of the composition of copolymers formed in free-radical copolymerisation. This is followed by a consideration of the relation between structure and reactivity of olefines towards hydrocarbon free radicals. In the third section, the problem of over-all rates of copolymerisation are discussed, and finally, the few available studies of copolymerisation by ionic mechanisms are reviewed. [233 references.] C—9.

Soap Solutions: Factors Influencing Aggregation. G. Stamsby and A. E. Alexander. *Trans. Faraday Soc.*, 1950, **46**, 587-597. The change in heat content ΔH and change in entropy ΔS have been calculated for the equilibrium, soap molecule in solution⇌soap molecule in a spherical micelle, by considering the factors involved in the aggregation process. It is shown that ΔH is negative, small, and increases numerically with increasing temperature. Values of ΔH calculated from the temperature coefficient of the critical micellar concentration, and from the temperature dependence of the saturation solubility of soaps in water, are in reasonable agreement with the theoretical values. The view is expressed that the main factors involved in the aggregation of soap solutions are the change in the hydrocarbon-water interface and the change from a curled molecule in solution to a more flexible and extended molecule in the micelle. The theoretical treatment has been extended to cover the effects of simple salts and organic molecules on the critical concentration for micelle formation and on its temperature dependence. The conclusions are supported by experimental data. C—9.

Microscopic Electrophoresis Cell. A. J. Rutgers, L. Facq, and J. L. van der Minne. *Nature*, 1950, **166**, 100-102. Problems associated with the design of a cell for the microscopic measurement of the electrophoretic speed of particles in a colloid or suspension are briefly indicated. A new cell has been designed to overcome these difficulties. The theory and practice of measurements using this cell are discussed, and some results are presented for determinations of electrophoretic velocity made with emulsions of tetraline. C—9.

Viscosity Changes: Detection by Tachometric Titration. L. J. Edwards. *J. Soc. chem. Ind.*, 1950, **69**, 193-195. An apparatus and procedure are described for detection of viscosity changes by tachometric titration. Changes of phase, gelling points, and similar phenomena accompanied by sudden large changes in viscosity may be located rapidly. The technique is of wide application, especially in the field of colloid science. Approximate values for absolute viscosities may be obtained by calibration against standard liquids. C—9.

Sound Waves: Chemical Action on Aqueous Solutions. N. Miller. *Trans. Faraday Soc.*, 1950, **46**, 546-550. Experimental data are given which confirm that the oxidative action of intense sound on dilute aqueous solutions of inorganic reducing agents is an "indirect" process, *i.e.*, that it is due to reactive fragments produced in the disruption of water molecules by the sound. Possible methods by which a portion of the energy of the sound is degraded in this way are briefly discussed. C—9.

Colour Systems and Atlases. C. L. Boltz. *Nature*, 1950, **166**, 129-132. An elementary introduction is given to the subject of colour specification. The C.I.E. (I.C.I. in U.S.A.) system of objective colour specification and the type of chromaticity chart used are briefly explain. Short descriptions are also given of the Munsell system and the Ostwald system of colour specification. C—9.

Colour Discrimination. W. D. Wright. *Rayon synth. Text.*, 1950, 31. April, 79-80; June, 80. The "just noticeable difference" between two hues which an observer is able to detect is discussed. The measurement, significance and interpretation of this quantity are briefly discussed. C—9.

Polystyrene: Structure; Light Scattering Investigation. P. Outer, C. I. Carr, and B. H. Zimm. *J. chem. Phys.*, 1950, **18**, 830-839. Using light scattering, the mean square molecular radius and length of a number of samples of polystyrene have been measured as a function of solvent and temperature. Molecular weights, intrinsic viscosities, and "osmotic second virial coefficients" have also been determined on many of these samples. From the data conclusions have been drawn about the stiffness of the chains, the effect of temperature and solvent on the chains, and an upper limit has been set on the amount of branching compatible with the observed results. C—9.

Photo-electric Tricolorimeter. R. F. Dennington. *J. Oil Col. Chem. Ass.*, 1950, **33**, 137-142. The construction of a new design of photo-electric tricolorimeter is described. The instrument uses three barrier layer cells, each having a filter and galvanometer, so that the colour of a painted pattern is shown by the simultaneous deflection of the three galvanometers on the red, green, and blue scales respectively. Photographs and diagrams are given. C—9.

"Mikrops" Industrial Micro-projector. Flatters and Garnett Ltd. *Text. Mfr*, 1950, **46**, 220-222. A general view and diagram of the essential parts are given of an instrument that combines a microscope with a projector so that the image of the object under examination is thrown on a translucent screen, 8 in. × 10 in. Four alternative magnifications between 25 and 660 diameters are normally provided. The image may also be thrown on a wall screen 4 ft. or more across. The unit is 32 in. × 11 in. × 26½ in. high. C—9.

Wood Cellulose: Change in Orientation in Sound and Infected Tracheids; X-Ray Examination. J. Sen and B. K. Banerjee. *Science*, 1950, **111**, 151. X-ray diagrams have been obtained of sound samples of chir (*Pinus longifolia*) sapwood, and samples infected with *Lenzites striata*. Photographs taken with the X-ray beam normal to the tracheal axis show different patterns for the sound and infected wood samples. These patterns indicate that the degree of disorientation of cellulose crystallites from the tracheal axis is much greater in the case of the sound sample of chir wood than that of the infected sample, as has been confirmed by microscopical examination. This shows that the cellulose orientation can be changed by means of enzymic hydrolysis. C—9.

Textile Fibres: Crystallite Orientation; X-Ray Examination. L. Segal, J. J. Creely, and C. M. Conrad. *Rev. sci. Instrum.*, 1950, **21**, 431-435. The quantitative evaluation of crystallite orientation in textile fibres by X-ray methods is discussed. Photographic recording and photometering of the resulting films can be replaced by automatic recording on a strip chart with the aid of an X-ray spectrometer with Geiger counter. The design and details are given for a specimen holder capable of properly positioning and rotating a bundle of fibres in the X-ray beam so that the selected diffraction arc passes before the window of the counter. Some typical recordings of the intensity curves of the 002 arcs from ramie, cotton, and high-tenacity rayon are presented. C—9.

Wood Pulp: Swelling in Sodium Hydroxide Solution; X-Ray Analysis. L. Jörgensen and E. Ribi. *Nature*, 1950, **166**, 148. A comparison has been made of the X-ray diffraction patterns of wood pulp samples swelled in the range of sodium hydroxide solutions where rather abrupt changes in the hydrolysis and water-regains are observed. Two bleached pulps with degrees of polymerisation (*D.P.*) 1,700 and 1,300, respectively, were swelled in sodium hydroxide solutions varying in concentration from 5·5 to 8·0 weight per cent. in 3° C. The X-ray diffraction diagram of the pulp of *D.P.* 1,700 swelled in 5·5 per cent. lye exhibits an unchanged cellulose I pattern, whilst the diagram for that from 6 per cent. lye shows partial mercerisation (*i.e.*, formation of some cellulose II). The 8 per cent. sample has a pure cellulose II diagram. The mercerising of the pulp of *D.P.* 1,300 is retarded as compared with the first pulp, for the 6 per cent. sample gives an X-ray diagram showing very little change towards cellulose II. Some results are reported which show that the X-ray analysis of the two pulps is in full

agreement with the hydrolysis and water-absorption properties. A possible explanation is suggested for the fact that wood pulps are more easily mercerised than is cotton. C—**9.**

Cellulose: Effect of Milling; X-Ray and Electron-Microscope Investigation. K. Hess, H. Kiessig, and J. Gundermann. *Z. physikal. Chem.*, 1941, 49B, 64-82 (through *Kodak mthly Abstr. Bull.*, 1950, **36**, 147). The changes produced by mechanical shredding (milling) of cellulose (wood pulp) have been investigated. Electron-microscope examination showed that the cellulose fibres were separated into fibrils of 100 A. to 750 A. thickness by the milling operation. X-ray separation showed that mechanical shredding destroyed the crystalline arrangement in the fibrils. Crystallinity was restored to this material by contact with water but the cellulose II modification was obtained after extensive milling. A decrease in viscosity as a result of milling was attributed to changes within the structure of the fibrils. Continued milling produced a crimping and matting of the fibrils. It is concluded that changes in properties of the milled materials were due, not only to increased surface area, but also to changes in the structure within the fibrils. C—**9.**

Electron Microscope: Uses. V. E. Cosslett. *Discovery*, 1950, **11**, 245-252. The principles and construction of the electron microscope are briefly described and modern developments in design are indicated. Some applications of the electron microscope (to bacteriology, biology, metallurgy, etc.) are discussed including specimen preparation and sectioning. Several photographs and electron micrographs are presented. C—**9.**

Electron Microscope: Detection of Vibration Interference. F. A. Hamm and F. C. Snowden. *Rev. sci. Instrum.*, 1950, **21**, 426-431. A scheme is described whereby vibrations interfering with the performance of an RCA electron microscope (Type EMU) have been traced and measured. The procedure involves use of a phonograph pick-up arm in conjunction with a cathode-ray oscillograph. Electron micrographs are shown to illustrate the image displacements due to several different amplitudes of vibration. The scheme may be used to discover the best location for an electron microscope. C—**9.**

Friction and Adhesion: Relationship. J. S. McFarlane and D. Tabor. *Proc. roy. Soc.*, 1950, *A*, **202**, 244-253. Simultaneous measurements have been made of the friction and adhesion of steel sliding on indium in air. The results show that both the normal and tangential stresses play a part in the deformation of the metallic junctions formed at the interface. The phenomena occurring from when the surfaces are first placed in contact, until macroscopic sliding occurs, are followed. The results emphasize the reality of the cold welding process. C—**9.**

Solids: Adhesion and Effect of Surface Films. J. S. McFarlane and D. Tabor. *Proc. roy. Soc.*, 1950, *A*, **202**, 224-243. The adhesion between solid surfaces in air, under various experimental conditions, has been investigated. If friction between metals is due to the shearing of junctions formed by adhesion or welding at the points of intimate contact, it would be expected that when the load is removed the junctions would remain and an appreciable normal force would be needed to separate the surfaces. It is shown that with clean hard surfaces in dry air, the adhesion is negligibly small. In moist air, appreciable adhesion may be observed but this is due to the surface tension of a thin film of adsorbed moisture. The absence of adhesion between clean hard surfaces is not due to the non-formation of metallic junctions. Experiments show that it is due to the released elastic stresses which break the junctions one by one as the load is removed. With very soft metals such as lead or indium, where the effect of released elastic stresses is very much less important, marked adhesion is observed in air, if the surfaces are freed of grosser contaminants. This adhesion provides direct evidence for the formation of metallic junctions by a process of cold welding at the points of contact. The effects of films of oxides and lubricants have also been noted. C—**9.**

Friction. F. P. Bowden. *Nature*, 1950, **166**, 330-334. Friction is discussed under the headings: area of contact between solids, friction and adhesion, general effect of surface films, surface temperature of sliding solids, and frictional properties of plastics. C—**9.**

The Sliding Surface. G. I. Finch. *Proc. phys. Soc.*, 1950, B, **63**, 465-483. A full report of the 34th Guthrie Lecture of the Physical Society is presented. A sliding element in its simplest form is considered to consist of nine distinct components. These are (i) and (ii) the metallic backings supporting (iii) and (iv) the pair of metal surface layers or so-called bearing surfaces which, in turn, carry (v) and (vi) their appropriate oxide layers each with its (vii) and (viii) adsorbed boundary layer of lubricant, and (ix) an oil film of varying thickness held between the boundary layers. In this review the sliding surface is considered from the point of view of these elements. Photomicrographs and electron-diffraction patterns of metallic surfaces are presented. C—**9**.

Surface Roughness and Contact Angle. J. J. Bikerman. *J. phys. colloid Chem.*, 1950, **54**, 653-658. Contact angles have been measured using solid surfaces the profile of which was determined with a tracer instrument. The system investigated comprised drops of distilled water in air on stainless steel plates of different finishes. The results show that surface roughness had no definite effect on contact angle. The way in which roughness may be expected to affect wetting is discussed. C—**9**.

Diffusion in Solution: Definition for the Colloidal State. A. Polson. *J. phys. colloid Chem.*, 1950, **54**, 649-652. The relationship between the diffusion constants and molecular weights of electrically neutral organic substances of condensed structure can be represented by a smooth curve. The equation of this curve for molecular weight greater than 1000 is $D = C/M^{\frac{1}{3}}$, where D is the diffusion constant of the molecule and C is a constant of value $2{\cdot}74 \times 10^{-3}$. The molecular weight of 1000 marks the position above which a molecular dispersion can be regarded as colloidal. The smooth curve offers a means of estimation of molecular weights of organic substances of condensed structure. C—**9**.

Evaporation Through a Membrane. ("Influence of Concentration-dependent Diffusion on Rate of Evaporation.") J. Crank. *Proc. phys. Soc.*, 1950, **B**, **63**, 484-491. It has been suggested that evaporation through a membrane or from a polymer film has a characteristic behaviour different from that commonly associated with a free liquid surface. In this paper the behaviour of such diffusion-controlled evaporation processes is examined from the point of view of the diffusion equations and it is found that there is no theoretical reason to expect such processes to show anomalous behaviour. These considerations do not appear to support the view that the rate of evaporation either through a membrane or from a polymer film can be increased by increasing the surface humidity as has been suggested. The so-called "skin effect" in the dry spinning of fibres is examined and appears to be due to complicating features other than diffusion. C—**9**.

Nylon Fibres: Anomalous Swelling. M. V. Forward and H. J. Palmer. *J. Textile Institute*, 1950, **41**, T267-278. Some comments are made on the anomalous swelling of drawn and undrawn nylon yarns reported by Abbott.[1] (A) The increase in the moisture regain of nylon yarns after water and ethanol treatments may be due to the removal of an anti-static finish which is usually present on commercial yarns. (B) Commercial yarns always contain a certain small percentage of material of low molecular weight, which is soluble in organic liquids. This factor, together with the fact that the removal of *m*-cresol from nylon yarn is extremely difficult, may explain the decrease in moisture regain observed in Abbott's later experiments. (C) Abbott's lateral swelling values are probably in error owing to an unsuitable technique for their measurement. (D) A conception of the fine physical structure of nylon is outlined and it is briefly shown how anisotropic swelling might be explained on this basis. It is considered that in textile fibres there is a wide range of states of order and interchain bonding energy levels. All the properties usually said to be controlled by the so-called amorphous regions may be considered to be governed by the "spread" of the interchain bonding energies of levels below that associated with complete order (100 per cent. crystallinity). ([1] *J. Textile Institute*, 1950, **41**, A307, A364, A476.) C—**9**.

Plasticizer-Polymer Systems: Temperature Sensitivity. A. Dyson. *J. Soc. chem. Ind.*, 1950, **69**, 205. It is shown that the temperature dependence of the viscosity of a plasticizer may be less than that of a polymer, and that the addition of a plasticizer to a polymer may reduce the sensitivity of the system. This is confirmed by experiment. C—**9**.

Violanthrone, *iso*Violanthrone, and Pyranthrone: Electrical Conductivity. H. Akamatu and H. Inokuchi. *J. chem. Phys.*, 1950, **18**, 810-811. Violanthrone, *iso*violanthrone, and pyranthrone have electrical conductance to a certain degree. This is due to the molecular structure of these compounds (which are made of the network planes of carbon atoms) and to the assumption that the π electrons contribute to the electrical conduction. The electrical resistivity of the three dyes has been measured, and the relation between resistivity and temperature investigated. C—**9**.

Grouping Corrections and Maximum Likelihood Equations. D. V. Lindley. *Proc. Camb. phil. Soc.*, 1950, **46**, 106-110. The effect of grouping on the maximum likelihood method of estimation is investigated. The grouping corrections obtained, unlike Sheppard's corrections, apply to sample values (estimators) and not to population values (parameters), and are of direct use in inference problems. C—**9**.

Numerical Integration by Systematic Sampling. P. A. P. Moran. *Proc. Camb. phil. Soc.*, 1950, **46**, 111-115. Work by previous writers on certain errors involved in numerical integration by systematic sampling is extended. The present work is not restricted to symmetrical functions. C—**9**.

Cross-Linkage Formation in Keratin. C. Fearnley and J. B. Speakman. *Nature*, 1950, **166**, 743-744. Lincoln wool fibres were treated for 24 hours at 50° C. with a 2·5 per cent. solution of a diepoxide in phosphate buffers at *pH*'s ranging from 4·44 to 7·87. The diepoxides used were 1:2-3:4-diepoxybutane (I) and 1:2-5:6-diepoxyhexane (II). The fibres were washed and the extent to which supercontraction could be induced by boiling for 30 min. in a 5 per cent. solution of sodium metabisulphite determined. Unlike fibres treated with buffer alone, those treated with an acid solution of (I) fail to supercontract, thus the reagent is capable of forming new cross-linkages between the peptide chains of wool. Supercontraction is not prevented by (II), and it is suggested that this is due to ring formation after primary reaction with the carboxyl groups of wool. W—**9**.

The Action of Potassium Chloride on Keratin. J. B. Speakman and E. Whewell. *J. Textile Institute*, 1950, **41**, T329-T330. Potassium chloride solution has a pronounced weakening effect on human hair fibres, an effect which is masked by the fall in the relative humidity of the solution with increasing salt concentration. It is suggested that part, at least, of the weakening in a saturated solution of potassium chloride is due to its action in reducing the attraction between the oppositely charged ions of salt linkages. W—**9**.

Wool Structure: Recent Advances. H. Lindley. *Research*, 1950, **3**, 509-513. Recent physical and chemical investigations into the fine molecular structure, the macromolecular structure and the histological structure of wool are surveyed. The major problem awaiting solution is the separation of the wool fibre into its component structures. W—**9**.

Protein Fibres: Enzymatic Digestion. M. T. Goldsmith. *Text. Res. J.*, 1950, **20**, 613-616. A method has been described for the preparation of a cell-free proteolytic enzyme elaborated by an actinomycete. The activity of the enzyme has been demonstrated on wool as well as on several fibres derived from proteins from milk, corn, peanuts, and soybean. The enzyme preparation was sufficiently active to digest to some extent all the protein fibres; soybean and wool showed the least susceptibility. With the exception of the soybean, it would appear that the stability of protein fibres to enzymatic digestion, imparted by the manufacturing processes, is not of the same order as that found in the protein of wool. W—**9**.

Modification of Wool by Chemical and Thermal Action. ("Veranderungen der Wolle durch chemische und thermische Einwirkungen.") H. Zahn. *Melliand Textilber.*, 1950, **31**, 481-486. The chemical and physical decomposition of wool by boiling water was investigated for periods of up to 8 days. Water acted as a solvent for incompletely cornified parts of the fibre, splitting acid amide and cystine bonds and transforming the crystalline portions of the fibre, after prolonged treatment, into α-keratin. Wool gelatine, *i.e.*, the substances dissolved from wool by cold water, was studied by paper partition chromatography. The wool gelatines consisted of a mixture of polypeptides and contained only about half as much cystine as the original fibre, and less phenylalanine,

The portions which dissolve slightly in cold water differed greatly in amino-acid composition from the original wool. When dry horsehair was heated, decomposition took place above 150° C., cystine, arginine, proline and threonine being decomposed. Dry keratin fibres were found to be considerably more resistant to heat than moisture, wool heated in water in a sealed tube being found to contract at 130° C. W—**9.**

Clothes Moth: Occurrence of a Network in the Excrement from Larva. G. Lagermalm, B. Philip, and N. Gralén. *Nature*, 1950, **166**, 484-485. Examination in the electron microscope of excrement from the larva of the clothes moth has revealed three main types of network. Photographs of these are included. It is considered that these types of network originate from the intestines of the moth larvæ, as they have also been found in excrement from larvæ fed on a diet free from wool. W—**9.**

Proteins: Application of Ionophoresis and Partition Chromatography to Structure—The Identification of some Peptides Derived from Wool. R. Consden and A. H. Gordon. *Pro. XIth Int. Congress of Pure and Applied Chemistry*, **2**, 399-400. The application of the methods of ionophoresis and paper partition chromatography to the elucidation of the structure of proteins is described. Details of the peptides derived from wool by partial acid hydrolysis are given. W—**9.**

10—ECONOMICS

Cotton Piecegoods: Imports by Iran. Anon. *Indian Text. J.*, 1950, **60**, 642. Details are given of Iran's yearly imports of cotton piecegoods. The supply of these goods to the Persian market is discussed. C—**10.**

Japanese Rayon Industry. ("Can Japan Restore Its Pre-War Rayon Markets.") H. R. Murdock. *Rayon synth. Text.*, 1950, **31**, June, 33-36. The present position of the Japanese rayon-producing industry is reviewed from the points of view of raw materials, equipment, labour, and technology. Tables compare the rayon staple and filament production of Japan from 1930 to 1948 (yearly) with that of other countries. Other tables give the post-war production figures for the various Japanese plants. C—**10.**

Artificial Fibres and Allied Fields in Japan. N. Cruz, jun. *Bibl. of tech. Reports*, 1950, **13**, 296 (through *Text. Tech. Digest*, 1950, **7**, 515). A recent comprehensive survey of the industry as practiced in Japan is presented. Many details are given and operations covered include the synthetic fibres Kuravilon and Amilan. Ramie, pulp, paper, rayon machinery, and high-pressure hydrogenation studies are also covered. C—**10.**

Pakistan Cotton Production. Anon. *Text. Wkly*, 1950, **46**, 498, 500. The following statistics concerning the production of cotton in Pakistan are summarised: Acreage and production of cotton yearly from 1938 to 1948; estimated production of different types of cotton during the 1949-50 season; stocks, production, and imports of cotton for 1947-48 and 1948-49; and the (forecast) area and production of cotton (by provinces and states) for the 1949-50 season. C—**10.**

Peruvian Textile Industry. Anon. *Text. Wkly*, 1950, **46**, 484. A few brief details are given showing the present position of the Peruvian textile industry (including number of mills and value of production and wages during 1948). At the present time, the industry is faced with a steady increase in cost of production with a concurrent decrease in consumption. C—**10.**

West German Textile Industry: Economic Position. Anon. *Text. Wkly*, 1950, **46**, 508. The present situation of the textile industry in Western Germany is surveyed briefly. The general picture is one of rising prices and declining trade. C—**10.**

Rayon and Synthetic Textiles: Production and Usage. Anon. *Brit. Rayon & Silk J.*, 1950, **27**, 70, 73. The present and probable future position of the world trade in staple and filament rayon and synthetic textiles (with particular reference to the United Kingdom) is reviewed. The estimated operable capacities for staple fibres of various countries for 1951 are compared with the figures for 1941. A substantial increase in production is indicated. Monthly figures for the exports of fully-fashioned nylon hose from the United Kingdom to various countries are given for 1949 and 1950 (up to May). C—**10.**

Textiles For The Rubber Industry. W. A. Karl. *Papers Amer. Ass. text. Tech.*, 1950, **5**, 131-138; *Brit. Rayon & Silk J.*, 1950, **27**, August, 56. An account is given (completely in the American journal and in review form in the British journal) of a paper presented before the American Association of Textile Technologists on the development of textiles for the rubber industry. Some problems concerning the use of textile materials (cotton, rayon, and nylon) in tyres are discussed. C—**10.**

Textile Wholesale Prices, June, 1950. Anon. *Board of Trade J.*, 1950, **159**, 78-79. The index numbers for June, 1950, are: cotton 377·5, wool 436·2, other textiles 187·4, all articles, 255·8. The index number for cotton showed a 1·1 per cent. rise over the May figure; there was a check in June to the rise in wool prices. C—**10.**

Employment in Textile Industry: Ratio of Staffs to Operatives. ("Rising Ratio of Non-Producers.") K. S. Lomax. *Text. Wkly*, 1950, **46**, 684, 686. From the author's survey[1] of the changes in the ratio of supervisory staffs to operatives in British industry, sections dealing with the textile industry have been abstracted. Figures are presented showing the increase in this ratio in various sections of the textile industry over the period 1907-1948. [1]Appearing in the District Bank *Review*, September, 1950.) C—**10.**

Costing in the Textile Industry. S. H. Withey. *Text. Wkly*, 1950, **46**, 682. To keep up with continually rising costs, it is imperative that an appropriate system of materials accounting should be instituted and maintained. Some advice is given on the organisation of costing systems in the textile industry. C—**10.**

Company Management: Application of Accounting Control. ("Management Application of Accounting Control in a Vertical Amalgamation.") W. Ellison. *Brit. Inst. Management*, 1950, *Winter Proc.* No. 7, 18 pp. A description is given of an accounting control system, employed by a company engaged in the silk textile industry, for the control of sales, materials, labour, and finance. The paper is followed by a discussion. C—**10.**

Lucchese Silk Industry. F. E. de Roover. *Ciba Rev.*, 1950, No. 80, 2907-2913, 2915-2920, 2923-2930. (1) The beginnings and commercial aspects of the Lucchese silk industry are described. This industry was founded some time before the twelfth century in Lucca, the capital of Tuscany. (2) An illustrated description is given of the processes that were employed in the manufacture of Lucchese silks. (3) The kinds of silk cloth produced in Lucca are described briefly and the types of designs that were used are discussed in greater detail. Several examples of the art of the Lucchese designers and weavers are shown. A bibliography is given. C—**10.**

Cotton Exports from U.K. for First Six Months of 1950. Anon. *Text. Rec.*, 1950, 68, August, 96-97. The trade figures for exports of cotton goods from the United Kingdom during the first six months of 1949 and 1950 are compared. These show a serious decline in the cotton export trade. The most serious decline has taken place in the Indian market. Figures and charts are given to illustrate the slump. C—**10.**

Quality Control. ("Practical Aids in Quality Control at Hardwick Woolen Mills.") *Text. Industries*, 1950, **114**, No. 10, 115-116. Some of the precautions taken to prevent difficulties arising in several stages of manufacture are described, and details are given of methods for increasing efficiency. W—**10.**

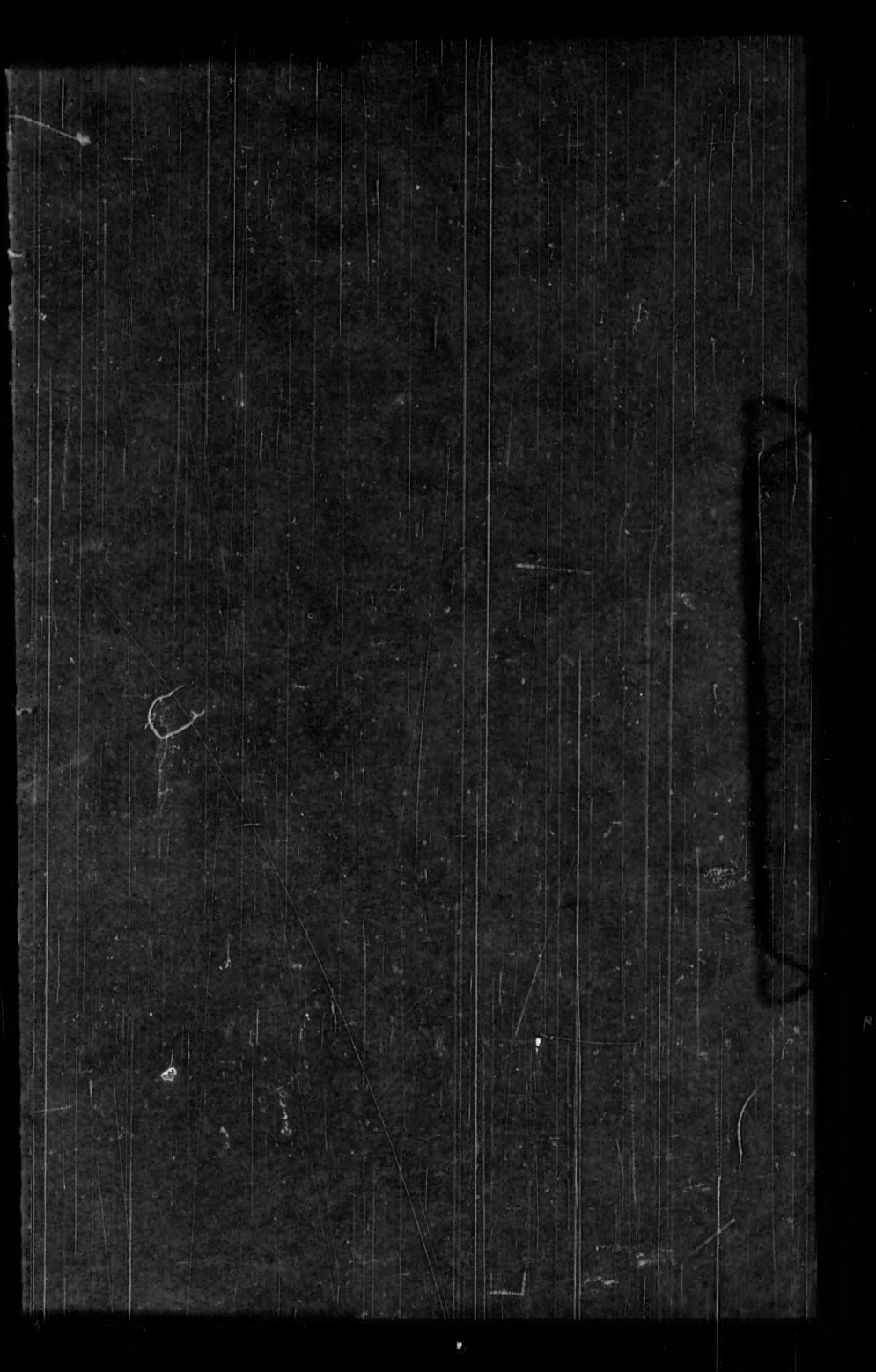
Silk: Future. *Hosiery Ind. Wkly.*, 1950, **58**, (17), 1, 4. Report of discussions of the future of silk at the second International Silk Congress in New York. It was announced that NAHM is to urge manufacturers to include silk in their long-range plans for hosiery promotions. Other silk-topic discussions concerned European plans, production in Japan and other nations, and silk standards. H—**10.**

Hosiery: Price (U.S.). *Hosiery Underwear Rev.*, 1950, **33**, (10), 40-1, 71-2. Review of the causes of the present shortage of 30 denier stockings in the U.S., occasioned mainly by price considerations; yarn and knitting costs are relatively high, but 30-denier stockings are in many cases priced lower than 15-denier. H—**10.**

11—INDUSTRIAL WELFARE, INDUSTRIAL PSYCHOLOGY AND EDUCATION

Textile Developments, 1950. J. B. Goldberg. *Text. Rec.*, 1950, **68**, August, 93-94. A short survey is given of some of the developments in the textile industry during the first five months of 1950. These cover synthetic fibres, cotton processing, spinning, weaving, finishing, testing, and fabric developments. C—**11**.

Industrial Safety Colour Code. H. L. Miner. *Offic. Digest Fed. Paint Varn. Prod. Clubs*, 1950, No. 301, 141-144. The use of colour codes to identify injury hazards and safety devices, and the setting up of such a system are briefly discussed. C—**11**.

Toxicity of Solvents. W. A. Cook and L. E. Gordan. *Offic. Digest Fed. Paint Varn. Prod. Clubs*, 1950, No. 301, 124-129. The toxicity of industrial solvents is discussed with particular reference to the paint and varnish industries. The effect of solvent toxicity on workers, industrial relations, and sales is mentioned, and the relative toxicities of some solvents are considered. C—**11**.

Wool Textile Research. *Text. Mfr.*, 1950, **76**, 430-433. An illustrated article describing some of the activities of the Wool Industries Research Association. W—**11**.